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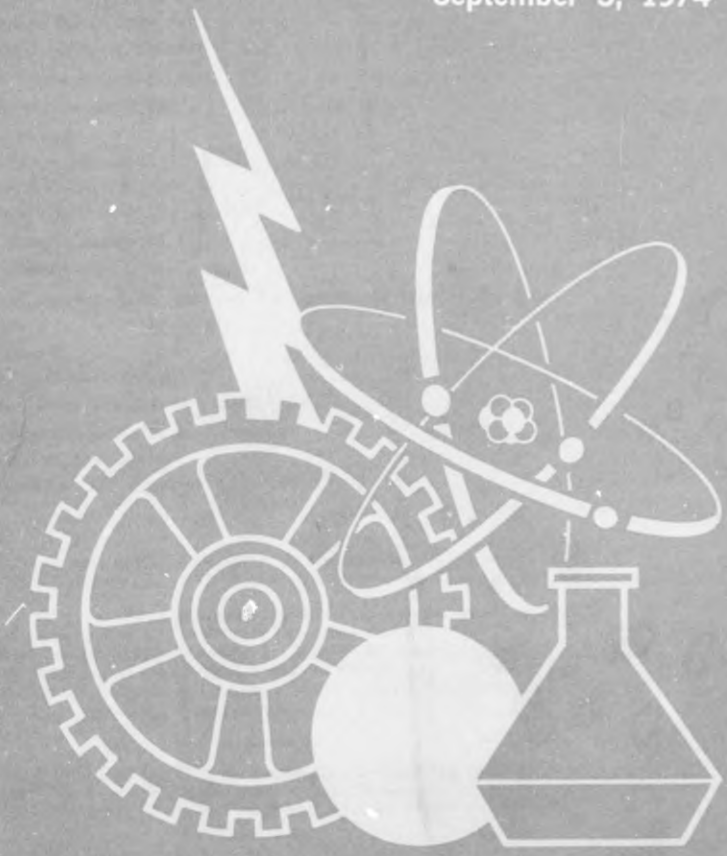

U. S.
DEPARTMENT
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OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

September 3, 1974 Volume 926 Number 1

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PATENT OFFICE NOTICES

Calculation of Issue Fees

Effective October 1, 1974, the Patent Office in calculating the balance of issue fee due, after payment of the Base Issue Fee specified by the Notice of Allowance, shall charge at the rate of $10 a page, as provided in 35 USC 41, for each printed page of specification (including claims) for which payment has not theretofore been received. As the Base Issue Fee includes a $10 charge for one printed page of specification, a balance of fee will be due for each patent which consists of more than one printed page. A "page" consists of one side of a printed sheet containing any amount of specification (including claims). A notification of the Balance of Issue Fee Due will be mailed in each such case along with the original patent grant.

The notice of February 4, 1970 published in the OFFICIAL GAZETTE [872 O.G. 1] and reproduced in the current "Consolidated Listing of Recent Official Gazette Notices . . ." [Item 53] is rescinded as of close of business September 30, 1974.

WILLIAM I. MERKIN,
Aug. 1, 1974. *Assistant Commissioner for Administration.*

Manual of Patent Examining Procedure, 3rd Ed.

CHANGE NOTICE

Series No. 42–1
(Follows Change 41–1)

Reference: MPEP 713.04 August 9, 1974

Record of Interviews in Patent Applications

Applicants and their attorneys or agents are reminded that a complete written statement as to the substance of any interview with regard to an application must be made of record in the application, whether or not an agreement with the examiner was reached at the interview. The necessity to so complete the record of an application is emphasized by the requirements of Rules 2 and 133(b). Rule 2 provides in part that

> "All business with the Patent Office should be transacted in writing.
>
> * * * * *
>
> "The action of the Patent Office will be based exclusively on the written record in the Office."

Obviously, the action of the Patent Office cannot be based exclusively on the written record in the Office if that record is itself incomplete through the failure to record the substance of interviews. In addition to the requirement of Rule 2, Rule 133(b) is specific that

> "In every instance where reconsideration is requested in view of an interview with an examiner, a complete written statement of the reasons presented at the interview as warranting favorable action must be filed by the applicant. An interview does not remove the necessity for response to Office actions as specified in Rules 111, 135."

Applicants and their attorneys or agents are responsible for compliance with the requirement for a complete written statement except in those situations in which it is agreed that the examiner will issue an Office action upon the application without further written response on behalf of applicant. In those situations, the examiner will make the substance of the interview of record in the Office action. The examiner may also complete the record of an interview if significant matters are inadvertently omitted from a written statement filed on behalf of applicant.

Noncompliance on behalf of applicant with the above noted requirement for a complete written statement when filing a response, will result in the applicant being given one month from the date of the notifying letter or the remainder of any period for response, whichever is longer, to complete the response and thereby avoid abandonment of the application (Rule 135(c)). Except for the paragraphs under the heading "EXAMINER TO CHECK FOR ACCURACY" the substance of this notice supersedes Section 713.04 of the Manual of Patent Examining Procedure.

WILLIAM FELDMAN,
Deputy Assistant Commissioner for Patents.

Citation of Prior Art by Applicants

The purpose of this notice is to set forth positive guidelines for applicants, their attorneys and agents who desire to submit prior art for consideration by the Patent Office. Such citations of relevant art are welcomed and are encouraged. In order that they may be most effectively considered by the examiner, however, with as little disruption of the regular examination process as possible, it is requested that they be submitted in accordance with the following guidelines.

(1) Citations should be submitted within three months after the application filing date if possible. Any citation made after the first action on the merits (if this occurs more than three months after filing) should be accompanied by an explanation of why it was not earlier presented. This may take the form of a statement that it was made as soon as the art or other material was discovered, or as soon as its pertinency was appreciated, indicating the date of discovery of the cited material or its pertinency.

(2) Full text copies of the pertinent portions of all such prior art citations or other material relevant to patentability of the claimed invention should be supplied, whether the citation is made in a separate paper or in the specification of the application. This will be unnecessary in the case of pending or abandoned United States applications (e.g. Defensive Publications). In the case of publications, a copy of the title page, its copyright notice or other indication of a publication date, and copies of the entire pages which contain the text of the relevant material will be sufficient.

While patent copies are, of course, available in the Patent Office, failure of the applicant to include copies of the cited art means that the examiner must interrupt his examination until copies can be ordered and received. Since the person making the citation will have copies in hand, an overall saving in time and more expeditious examination will result if copies are supplied with the citation.

(3) If the reference is not in English, a translation of its pertinent portions should be included.

(4) Accompanying each citation should be an indication of its pertinency to the claimed subject matter, together with any reasons applicant may wish to point out why the claims are considered to be patentable over the cited material.

All citations of prior art or other material submitted in accordance with the above guidelines and submitted before all claims have been indicated as allowable will be fully considered by the examiner.

While the Patent Office will not knowingly ignore any prior art which might anticipate or suggest the claimed invention, no assurance can be given that cited art or other material not submitted in accordance with these guidelines will be considered by the examiner. Consequently, any patent issuing on the application in question would not be expected to be accorded the usual presumption of validity with respect to such cited art or material.

After the claims have been indicated as allowable by the examiner, e.g., by the mailing of an *Ex parte* Quayle action, a notice of allowability (POL–327), an examiner's amendment (POL–37), or a Notice of Allowance, any citations submitted will be placed in the file. Since prosecution has ended, however, such submissions will not ordinarily be considered by the examiner unless the citation is accompanied by:

(*a*) A proposed amendment cancelling or further restricting at least one independent claim and narrowing the scope of protection sought;
(*b*) A timely affidavit under Rule 131 with respect to the material cited; or
(*c*) A statement by the applicant or his attorney or agent that, in the judgment of the person making the statement, the prior art or other material cited raises a serious question as to the patentability of the claimed subject matter.

If the material is submitted after the base issue fee has been paid, it must also be accompanied by a petition under Rule 183 (37 CFR 1.183) requesting a waiver of Rule 312 (37 CFR 1.312). Such petition, if granted, would result in review of the art by the examiner and possible entry of the amendment.

Submitted citations will not in any way diminish the obligation of examiners to conduct independent prior art searches, or relieve examiners of citing pertinent prior art of which they may be aware, whether or not such art is cited by the applicant. Nothing in this notice is intended to relieve applicants of any responsibility they may have to cite known prior art to the Patent Office.

If the specification or a separate paper filed in the application contains citations relating to background material, applicant has the responsibility of determining whether or not such material is sufficiently relevant to the claimed invention that full compliance with these guidelines is necessary.

Prior art submitted by applicant in the manner provided herein will not be supplied with an Office action, but will be listed on the Form PO–892, "Notice of References Cited," along with other prior art relied upon by the examiner during the examination. Only that prior art listed by the examiner on Form PO–892, will be printed on the patent. However, the complete listing of applicant's citations will be in the application file and will be available for inspection by the public after issuance of the patent.

Citations of prior art may be placed of record in the patented file after the grant of the patent at the request of the patentee (see Section 100(d) of Title 35, United States Code, for definition of patentee). Any such submissions by the patentee will be placed in the patented file without comment by the Patent Office. Citations submitted to the Patent Office by third parties will not be placed in the record of a patented file unless the party submitting the art certifies that he has sent the owner of record copies of the cited art and of his letter transmitting it to the Patent Office.

Prior Notices

This notice supersedes the notices of:
December 10, 1963 (797 O.G. 733)
April 24, 1964 (802 O.G. 601)
June 22, 1964 (804 O.G. 1)
July 24, 1964 (805 O.G. 294)
April 13, 1967 (837 O.G. 1032)

WILLIAM FELDMAN.
Aug. 12, 1974. *Deputy Assistant Commissioner for Patents.*

Inventor's Certificates in Oath or Declaration

[37 CFR Part 1]

EXTENSION OF TIME FOR FILING WRITTEN COMMENTS

The Patent Office is extending from August 1, 1974 to September 30, 1974. the closing date for the submission of written comments on its proposed revision of Title 37, Code of Federal Regulations, §§ 1.65 and 1.67, to require listing of inventor's certificates and applications therefor in oaths and declarations. Notice of proposed rulemaking was published in the Federal Register issued July 2, 1974, 39 FR 24375.

RENE D. TEGTMEYER,
July 23, 1974. *Acting Commissioner of Patents.*

Approved:
BETSY ANCKER-JOHNSON,
Assistant Secretary for Science and Technology.

[FR Doc. 74–17999; Filed 8–6–74; 8:45 am]

39 F.R. 28439

PROPOSED LISTING OF CERTAIN PRIOR APPLICATIONS

Notice is hereby given that, pursuant to the authority contained in section 6 of the Act of July 19, 1952 (66 Stat. 793; 35 U.S.C. 6) as amended October 5, 1971 (85 Stat. 364), the Patent Office proposes to amend Title 37 of the Code of Federal Regulations by revising §§ 1.65 and 1.67.

Interested persons are invited to present their views, objections, recommendations, or suggestions in writing in connection with the proposed changes to the Commissioner of Patents, Washington, D.C. 20231 on or before August 1, 1974. No oral hearings will be held. Written comments or suggestions will be available for examination by interested persons at Crystal Plaza Building 3, Room 11C17*a*, Arlington, Virginia.

The proposed rule change is intended to implement the enforcement of that portion of Pub. L. 92–358, dated July 28, 1972, which relates to 35 U.S.C. 102(d). The text of Pub. L. 92–358 was printed at 918 O.G. 19. This Public Law amended subsection 102(d) of Title 35 of the United States Code to prohibit granting of a patent if the invention "was the subject of an inventor's certificate, by the applicant or his legal representatives or assigns in a foreign country prior to the date of the application for patent in this country on an application for * * * inventor's certificate filed more than twelve months before the filing of the application in the United States." The amendment to 35 U.S.C. 102(d) became effective on February 25, 1974.

In order that all such prohibitions will be called to the attention of the Patent Office, it is proposed that §§ 1.65 and 1.67 of 37 CFR be amended to require the listing of certain prior applications for inventor's certificates in the same manner as certain prior applications for patents must be listed now.

The paragraphs, if amended as proposed, would read as follows:

§ 1.65 *Statement of applicant.*

(a)(1) The applicant; if the inventor, must state that he verily believes himself to be the original and first inventor or discoverer of the process, machine, manufacture, composition of matter, or improvement thereof, for which he solicits a patent; that he does not know and does not believe that the same was ever known or used in the United States before his invention or discovery thereof, and shall state of what country he is a citizen and where he resides and whether he is a sole or joint inventor of the invention claimed in his application. In every original application the applicant must distinctly state that to the best of his knowledge and belief the invention has not been in public use or on sale in the United States more than one year prior to his application or patented or described in any printed publication in any country before his invention or more than one year prior to his application, or patented or made the subject of an inventor's certificate in any foreign country prior to the date of his application on an application filed by himself or his legal representatives or assigns more than twelve months prior to his application in this country. He shall state whether or not any application for patent or inventor's certificate on the same invention has been filed in any foreign country, either by himself, or by his legal representatives or assigns. If any such application has been filed, the applicant shall name the country in which the earliest such application was filed, and shall give the day, month, and year of its filing; he shall also identify by country and by day, month, and year of filing, every such foreign application filed more than twelve months before the filing of the application in this country. (2) This statement (i) must be subscribed to by the applicant, and (ii) must either (*a*) be sworn to (or affirmed) as provided in § 1.66, or (*b*) include the personal declaration of the applicant as prescribed in § 1.68. See § 1.153 for design cases and § 1.162 for plant cases.

* * * * *

§ 1.67 *Supplemental oath or declaration for matter not originally claimed.*

(a) When an applicant presents a claim for matter originally shown or described but not substantially embraced in the statement of invention or claim originally presented, he shall file a supplemental oath or declaration to the effect that the subject matter of the proposed amendment was part of his invention; that he does not know and does not believe that the same was ever known or used before his invention or discovery thereof, or patented or described in any printed publication in any country before his invention or discovery thereof, or more than one year before his application, or in public use or on sale in the United States for more than one year before the date of his application, that said invention has not been patented or made the subject of an inventor's certificate in any foreign country prior to the date of his application in this country on an application filed by himself or his legal representatives or assigns more than twelve months prior to his application in the United States, and has not been abandoned. Such supplemental oath or declaration should ac-

company and properly identify the proposed amendment, otherwise the proposed amendment may be refused consideration.

* * * * *

Dated: June 26, 1974.

C. MARSHALL DANN,
Commissioner of Patents.

Approved:
BETSY ANCKER-JOHNSON,
Assistant Secretary for Science and Technology.

[FR Doc. 74-15115; Filed 7-1-74; 8:45 am]

39 F.R. 24375

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,750,055, J. D. Huffines, REFUSE COMPRESSOR MECHANISM FOR VEHICLES, **filed** Nov. 6, 1972, D.C., N.D. Ohio (Cleveland), Doc. C-72-1206, *James Donie Huffines* v. *Peabody Galion, Inc., doing business as E-Z Pack.* Order rendering judgment in favor of the defendant, Feb. 8, 1974.

2,773,110, L. W. Parker, TUNING SYSTEM FOR RADIO AND TELEVISION RECEIVERS, **filed** Feb. 7, 1974, D.C., S.D. Fla. (Miami), Doc. 74-158-C JLK, *Louis W. Parker* v. *Sony Corporation of America.*

2,790,362, Higonnet and Moyroud, PHOTOCOMPOSING MACHINE; **3,332,617,** L. M. Moyroud, PHOTOGRAPHIC TYPE COMPOSING MACHINES, **filed** Sept. 16, 1970, D.C., N.D. Ill. (Chicago), Doc. 70c2278, *Photon, Inc.* v. *Compugraphic Corp. and Ottawa Publishing Co.* Enter order for entry of consent decree and order for injunction pursuant to agreement of all parties, Sept. 13, 1971.

2,827,325, B. G. Pugh, PERSONNEL AND CARGO LANDING NETS; **3,165,346,** same, LIFTING HARNESS FOR LANDING NET, **filed** Feb. 22, 1972, D.C., W.D. La. (Shreveport), Doc. 74-202-L, *Billy Gene Pugh* v. *Charles H. Roe.*

2,884,992, Spound and Martin, RECLINING CHAIR HEADREST CONSTRUCTIONS; **2,958,374,** same, AUTOMATICALLY PROJECTIBLE HEADREST; **2,982,340,** A. M. Spound, RECLINING CHAIR HEADREST CONSTRUCTIONS; **3,024,064,** same, **filed** Feb. 1, 1974, D.C., W.D. Va. (Lynchburg), Doc. 74-6, *Albert M. Spound, Joseph Spound and Morris Loeb* v. *Action Industries, Inc.*

2,925,719, Robbins and Linn, REFRIGERATING PACKAGE, **filed** June 8, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c1375, *Kwik-Kold, Inc.* v. *American Hospital Supply Corporation.* On stipulation of the parties pursuant to Rule 41(a)(1) case dismissed without prejudice, Oct. 18, 1972.

2,934,932, H. B. Wagner, HYDRAULIC CEMENT MORTAR COMPOSITIONS AND METHODS OF USE, **filed** Feb. 14, 1974, D.C.N.J. (Camden), Doc. 74-211, *Tile Council of America, Inc.* v. *A.A. Quality Corporation and David S. Weiant.*

2,956,114, Ginsburg, Henderson, Dolby and Anderson, BROAD BAND MAGNETIC TAPE SYSTEM AND METHOD, **filed** Sept. 11, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c2345, *Ampex Corporation* v. *Bell & Howell Company, International Video Corp., Litton Medical Products, Inc. and Swiderski Electronics, Inc.* Order cause transferred to N.D. of California as to the defendant Bell & Howell Co. Action as to the remaining defendants dismissed without prejudice to any claim existing to be reinstated as a matter of course upon motion of the parties, Jan. 11, 1974.

2,958,374. (See 2,884,992.)

2,961,105, J. M. Shubin, REFUSE VEHICLE AND LOADING APPARATUS THEREFOR, **filed** Feb. 15, 1974, D.C., E.D. Mich. (Detroit), Doc. 4-71151, *Maxon Industries, Inc., John M. Shubin and Peter S. Shubin* v. *Universal Handling Equipment Co. Limited.*

2,982,340. (See 2,884,992.)

3,009,525, R. De Liban, GUIDANCE SYSTEMS; **3,147,817,** same, **filed** Jan. 12, 1973, D.C., E.D. Mich. (Detroit), Doc. 39494, *Barrett Electronics Corporation* v. *Jervis B. Webb Company and Control Engineering Co.*

3,023,300, G. Lehnert, METHOD AND APPARATUS FOR FORMING CABLE SHEATH; **3,280,609,** same, METHOD AND MEANS FOR FORMING THIN METAL TUBING; **3,308,256,** same, APPARATUS FOR THE MANUFACTURE OF CORRUGATED THIN WALLED METAL TUBES; **3,383,895,** same, COILABLE WAVEGUIDE, **filed** May 3, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c1145, *Kabel- und Mettallwerke Gutehoffnungshutte Aktiengesellschaft* v. *Justice Associates, Inc.* By stipulation, order cause dismissed with prejudice, Jan. 22, 1974.

3,024,064. (See 2,884,992.)

3,025,200, W. R. Powers, CELLIFORM STRUCTURE AND METHOD OF MAKING SAME, **filed** Apr. 1, 1971, D.C. Conn. (New Haven), Doc. 14335, *Scott Paper Company* v. *Olin Corporation.* Order of dismissal entered, Jan. 25, 1974.

3,058,895, L. A. Williams, ELECTROLYTIC SHAPING, **filed** Feb. 5, 1974, D.C., S.D. Ohio (Cincinnati), Doc. 5882, *Brown & Sharpe Real Estate Co.* v. *Cincinnati Milacron, Inc.* Stipulation and order of dismissal with prejudice, Feb. 5, 1974.

3,102,690, G. M. Fee, RAIL ANCHORS; **3,118,327,** W. J. Eastman, TRANSFER MECHANISMS; **3,159,198,** H. E. Sutch, METHOD OF AND APPARATUS FOR THE MANUFACTURE OF RAIL ANCHORS, **filed** Sept. 12, 1973, D.C. Colo. (Denver), Doc. C-5347, *True Temper Corporation* v. *C.F. & I. Steel Corporation.*

3,118,327. (See 3,102,690.)

3,147,817. (See 3,009,525.)

3,159,198. (See 3,102,690.)

3,165,346. (See 2,827,325.)

3,208,256. (See 3,023,300.)

3,280,609. (See 3,023,300.)

3,332,617. (See 2,790,362.)

3,379,617, Andrews and Keller, MEANS FOR SUPPORTING FUEL ELEMENTS IN A NUCLEAR REACTOR; **3,379,618,** E. Frisch, FUEL ARRANGEMENT FOR A NUCLEAR REACTOR, **filed** Jan. 30, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c270, *Westinghouse Electric Corp.* v. *General Electric Company.*

3,379,618. (See 3,379,617.)

3,383,895. (See 3,023,300.)

3,469,572, J. R. Nehring, APPARATUS FOR TAKING MULTIPLE FLUID SAMPLES; **3,494,352,** Russo and Halligan, APPARATUS FOR TAKING MULTIPLE SAMPLES, **filed** Aug. 10, 1970, D.C., M.D. Fla. (Jacksonville), Doc. 70-733-C-J, *Becton Dickinson & Company* v. *Sherwood Medical Industries, Inc.* Final judgment dismissing plaintiff's complaint with prejudice, dismissing defendant's counterclaim with prejudice, Sept. 11, 1972.

3,494,352. (See 3,469,572.)

3,496,911, A. Chmelar, ELECTROSTATIC FLOCKING; **3,551,178,** same, METHOD AND APPARATUS FOR ELECTROSTATIC FLOCKING, **filed** Feb. 16, 1972, D.C., N.D. Ga. (Atlanta), Doc. 16205, *Velvetex Industrial Corporation* v. *Universal Textures, Inc.* Stipulation and order of voluntary dismissal entered dismissing complaint, defensive pleadings and counterclaims without prejudice, Nov. 28, 1973.

3,619,381, G. R. Fitterer, DETERMINING OXYGEN CONTENT OF MATERIALS; **3,752,753,** same, METHOD OF FABRICATING A SENSOR FOR THE DETERMINATION OF THE OXYGEN CONTENT OF LIQUID METAL; **3,773,641,** same, MEANS FOR DETERMINING THE OXYGEN CONTENT OF LIQUID METALS, **filed** Feb. 22, 1974, D.C., W.D. Pa. (Pittsburgh), Doc. 74-183, *Fitterer Engineering Assoc. Inc. and Dr. George R. Fitterer* v. *U.S. Steel Corp. et al.*

3,665,817, Katz and Grainger, FORMING MULTIPLE PAGE PAMPHLET; **3,713,673,** R. E. Katz, ENVELOPE-CONTAINING MULTIPLE PAGE PAMPHLET, **filed** Feb. 12, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c413, *Webcraft Packaging, Inc., etc.* v. *Cadillac Printing & Lithographing Corp.*

3,713,673. (See 3,665,817.)

3,752,753. (See 3,619,381.)

3,773,641. (See 3,619,381.)

Re. 16,581, M. R. Hull, AUTOMOBILE TOP; **Reg. No. 828,065** (LAMITEX), Franklin Fibre-Lamitex Corp., **filed** Nov. 3, 1969, D.C., S.D.N.Y., Doc. 69-4800, *Coleco Industries Inc.* v. *Empire Plastic Corp.* Filed consent judgment, defendants enjoined, plaintiff's claims for unfair competition dismissed with prejudice, Feb. 20, 1974.

Reg. No. 828,065. (See Reg. No. 16,581.)

Certificates of Correction for the Week of Sept. 3, 1974

3,645,418	3,782,364	3,787,487	3,796,475
3,683,027	3,782,443	3,787,728	3,798,418
3,728,529	3,782,656	3,787,737	3,798,607
3,740,708	3,782,801	3,787,811	3,799,230
3,742,328	3,783,139	3,787,823	3,800,206
3,756,004	3,783,745	3,787,930	3,800,411
3,767,496	3,783,970	3,788,190	3,800,689
3,768,074	3,784,101	3,788,299	3,801,488
3,769,204	3,784,423	3,788,690	3,802,525
3,769,387	3,784,576	3,788,743	3,802,663
3,771,450	3,785,091	3,788,790	3,802,682
3,772,363	3,785,468	3,789,051	3,802,932
3,772,392	3,785,660	3,789,162	3,803,023
3,773,587	3,785,908	3,789,174	3,803,269
3,774,426	3,785,950	3,789,772	3,803,334
3,774,452	3,786,000	3,790,030	3,803,383
3,774,607	3,786,177	3,790,804	3,803,489
3,774,753	3,786,222	3,791,152	3,803,730
3,774,875	3,786,473	3,792,380	3,803,825
3,775,618	3,786,538	3,793,026	3,804,739
3,776,644	3,786,638	3,793,132	3,804,903
3,776,965	3,786,824	3,793,234	3,805,214
3,779,871	3,786,872	3,793,385	3,805,274
3,780,753	3,786,886	3,794,014	3,805,370
3,780,842	3,787,064	3,794,196	3,806,689
3,782,165	3,787,074	3,794,418	3,806,982
3,782,207	3,787,085	3,795,326	3,807,403

Errata

All reference to Patent Number 3,623,352 to Kurt H. Kramer for High Energy Forging Press appearing in the OFFICIAL GAZETTE of November 30, 1971, should be deleted since no patent was granted.

All reference to Patent Number 3,682,987 to Kurt Radscheit et al. for Process for the Manufacture of Δ14-20-Keto-21 Dialkoxy Steroids, appearing in the OFFICIAL GAZETTE of August 8, 1972, should be deleted since no patent should have been granted.

All reference to Patent Number 3,691,296 to Graham Edward Marshman for Synchronizing Arrangement for a Motor Driven Facsimile Scanning Assembly, appearing in the OFFICIAL GAZETTE of September 12, 1972 should be deleted since no patent should have been granted.

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for licensing in accordance with the licensing policy of each agency-sponsor.

Copies of patent applications, either paper copy (PC) or microfiche (MF), can be purchased from the National Technical Information Service (NTIS), Springfield, Va. 22151, at the prices cited. Requests for copies of patent applications must include the patent application number and the title.

Paper copies of patents cannot be purchased from NTIS but are available from the Commissioner of Patents, Washington, D.C. 20231, at $0.50 each.

Requests for licensing information should be directed to the address cited below for each agency.

DOUGLAS J. CAMPION,
Patent Program Coordinator,
National Technical Information Service.

U.S. DEPARTMENT OF AGRICULTURE

Chief, Research Agreements and Patent Mgmt. Branch, Federal Building, General Services Division, Agricultural Research Service, Hyattsville, Md. 20782

Patent 3,228,855. Process for a Microbial Polysaccharide. Filed Aug. 13, 1971. Patented Oct. 2, 1973. Not available NTIS.

Patent 3,243,301. Ceral-Containing Varieties of Tempeh and Process Thereof. Filed Apr. 3, 1964. Patented Mar. 29, 1966. Not available NTIS.

Patent 3,280,103. Production of Methyl 6-Chloro-6-Deoxy Alpha-D-Glucopyranaside. Filed Sept. 4, 1964. Patented Oct. 18, 1966. Not available NTIS.

Patent 3,282,795. Production of 2-Ketogluconic Acid by "Serratia Marcescens." Filed Oct. 5, 1964. Patented Nov. 1, 1966. Not available NTIS.

Patent 3,304,276. Polyhydric Phenol Modified Fatty Media and Iron Surfaces Chelated Therewith. Filed May 13, 1964. Patented Feb. 14, 1967. Not available NTIS.

Patent 3,314,913. Hexose Polythiomercaptal Adhesives. Filed Jan. 18, 1965. Patented Apr. 18, 1967. Not available NTIS.

Patent 3,322,798. Process for Obtaining Pure Methyl Azelaaldehydate From Ozonolysis of Commercial Methyl Oleate. Filed May 14, 1964. Patented May 30, 1967. Not available NTIS.

Patent 3,329,518. Protein Glue for Southern Pine Plywood. Filed June 11, 1965. Patented July 4, 1967. Not available NTIS.

Patent 3,330,840. Derivations of Methyl 9,9-Dimethoxynonandate. Filed June 8, 1964. Patented July 11, 1967. Not available NTIS.

Patent 3,343,974. Composition for Increasing the Dispersion Stability of Titanium Dioxide Pigment. Filed May 13, 1964. Patented Sept. 26, 1967. Not available NTIS.

Patent 3,349,106. Solvent for Obtaining Very High Yields of Aldehydic Products From Soybean Oil. Filed May 5, 1965. Patented Oct. 24, 1967. Not available NTIS.

Patent 3,356,699. Alkali Isomerization of Crepenynic Acid to 8,10,12-Octadecatrienoic Acid. Filed June 9, 1965. Patented Dec. 5, 1967. Not available NTIS.

Patent 3,360,441. Microbiological Screening Process for Aflatoxin. Filed Sept. 16, 1965. Patented Dec. 26, 1967. Not available NTIS.

Patent 3,373,175. Conjugation of Vegetable Oils via Iron Tricarbonyl Complex. Filed July 9, 1965. Patented Mar. 12, 1968. Not available NTIS.

Patent 3,373,176. Tertamethyl Cyclobutanediol Diesters of Linseed-Derived C18 Saturated Vicinally Substituted Cyclic Monocarboxylic Acid Isomer Mixture. Filed Sept. 22, 1965. Patented Mar. 12, 1968. Not available NTIS.

Patent 3,383,284. Cosmetic Compositions Containing Cyclic C18 and C20 Alcohols. Filed June 19, 1964. Patented May 14, 1968. Not available NTIS.

Patent 3,385,719. Process for Production of an Alkali Starch Xanthate Solution. Filed Feb. 25, 1965. Patented May 28, 1968. Not available NTIS.

Patent 3,396,082. Glucan Production by Fermentation of Fleshy Fungi. Filed June 9, 1965. Patented Aug. 6, 1968. Not available NTIS.

Patent 3,414,515. Color Imparting Complexes of Starch Ethers for Swimming Pools. Filed Oct. 5, 1964. Patented Dec. 3, 1968. Not available NTIS.

Patent 3,433,738. Method of Precipitating Polyvalent Cations. Filed May 7, 1968. Patented Mar. 18, 1969. Not available NTIS.

Patent 3,433,752. Process for Preparing Rigid Polyurethane Foams of Open All Structure. Filed Jan. 4, 1967. Patented Mar. 18, 1969. Not available NTIS.

Patent 3,476,670. Polarographic Electrode Structure. Filed Apr. 10, 1967. Patented Nov. 4, 1969. Not available NTIS.

Patent 3,513,205. Cyclic C18 and C20 Alcohols. Filed Mar. 10, 1964. Patented May 19, 1970. Not available NTIS.

Patent 3,518,176. Graft Polymerization of Starch in Novel Alcohol Reduction Medium. Filed Feb. 25, 1966. Patented June 30, 1970. Not available NTIS.

Patent 3,522,056. Reduction of Strontium-90 Content of Intact Cereal Grains. Filed Aug. 6, 1965. Patented July 28, 1970. Not available NTIS.

Patent 3,669,915. Flocculants From Starch Graft Copolymers. Filed Sept. 8, 1970. Patented June 13, 1972. Not available NTIS.

Patent 3,673,136. Powdered Polysaccharide-Reinforced Elastomer Masterbatches, Compounds and Resulting Vulcanized Rubbers. Filed July 24, 1970. Patented June 27, 1972.

Patent 3,679,433. Protein-Enriched Baked Products and Method of Making Same. Filed Sept. 8, 1970. Patented July 25, 1972. Not available NTIS.

Patent 3,787,459. Selective Hydroformylation of Unsaturated Fatty Compounds. Filed Oct. 23, 1970. Patented Jan. 22, 1974. Not available NTIS.

Patent 3,795,670. Process for Making Starch Triacetates. Filed Mar. 5, 1973. Patented Mar. 5, 1974. Not available NTIS.

Patent 3,795,671. Epoxypropyl Starch. Filed Dec. 21, 1971. Patented Mar. 5, 1974. Not available NTIS.

U.S. DEPARTMENT OF TRANSPORTATION

Patent Counsel, 400 7th St. SW., Washington, D.C. 20590

Patent application 479,638. Emergency Lighting for Public Transportation Vehicles. Filed June 17, 1974. PC $4/MF $1.45.

U.S. ENVIRONMENTAL PROTECTION AGENCY
Room W513, 401 M St. SW., Washington, D.C. 20460

Patent 3,763,040. Processes for Reducing the Organic-Carbon Content of Water Contaminated With Organic Compounds by Continuous Countercurrent Multistage Treatment With Activated Carbon. Filed Aug. 13, 1971. Patented Oct. 2, 1973. Not available NTIS.

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
National Institutes of Health, Chief, Patent Branch, Westwood Building, Bethesda, Md. 20014

Patent application 447,029. Ultrasound Imaging System Utilizing Shaped Acoustic Matching Elements To Increase the Effective Aperture of an Acoustic Transducer. Filed Feb. 28, 1974. PC $4/MF $1.45.

Patent 3,728,543. Thermoluminescence of Sapphire. Filed Nov. 23, 1971. Patented Apr. 17, 1973. Not available NTIS.

Patent 3,788,772. Energy Converter to Power Circulatory Support Systems. Filed Mar. 4, 1971. Patented Jan. 29, 1974. Not available NTIS.

U.S. DEPARTMENT OF THE INTERIOR
Branch of Patents, 18th and C Sts. NW., Washington, D.C. 20240

Patent application 455,461. Method of Treating Semipermeable Membranes. Filed Mar. 27, 1974. PC $4/MF $1.45.

Patent application 465,384. Self-Tightening Inflatable Arch. Filed Apr. 19, 1974. PC $4/MF $1.45.

Patent 3,807,557. Flotation of Pyrite From Coal. Filed Aug. 11, 1972. Patented Apr. 30, 1974. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Assistant General Counsel for Patent Matters, NASA—Code GP–2, Washington, D.C. 20546

Patent 3,804,472. Journal Bearings. Patented Apr. 16, 1974. Not available NTIS.

Patent 3,805,266. Turnstile Slot Antenna. Patented Apr. 16, 1974. Not available NTIS.

Patent 3,806,835. Rapidly Pulsed, High Intensity, Incoherent Light Source. Patented Apr. 23, 1974. Not available NTIS.

Patents Available for Licensing or Sale

2,970,783. COMPOSITE WEARING PARTS FOR CRUSHERS AND THE LIKE. A. H. Plyer, 55 E. Monroe, Chicago, Ill., 60603.

3,727,118. CONTACTLESS REVERSIBLE DEVICE IN AN ELECTRIC CAR. Noriaki Makino. Correspondence to: Nippon Gijutsu Boeki Co., Ltd., 32F Kasumigaseki Bldg., 2–5 Kasumigaseki, 3-chome, Chiyoda-ku, Tokyo, 100 Japan.

3,736,730. APPARATUS FOR REMOVING TASSELS. Ora B. Dobson, Ralston, Iowa., 51459.

3,760,963. LIFTING ATTACHMENT FOR A CRANE. Correspondence to: Ronald P. Kananen, Esq., 1828 L St. NW., Washington, D.C., 20036.

3,781,408. AIR POLLUTION CONTROL. Ping-Wha Lin, 506 S. Darling, Angola, Ind., 46703.

3,797,217. METHOD AND ARRANGEMENT FOR MAKING SZ-TWISTED CABLES. Felten & Guilleaume Kabelwerke AG, 5 Cologne 80, Germany. Correspondence to: Michael S. Striker, 360 Lexington Ave., New York, N.Y., 10017.

3,800,444. SANDAL CONSTRUCTION. C. K. Young, Box 787, Kings Beach, Calif., 95719.

3,811,461. COVERING DUAL ACTION TRIGGERING VALVE DEVICE FOR INFLATABLE EQUIPMENT. J. F. Novak, 609 State St., Calumet City, Ill., 60409.

3,820,274. FINGER SAVER PLIERS. T. F. Drenzyk, 4 Prospect Place, Torrington, Conn., 06790.

3,822,490. HOLLOW MEMBER FOR SHOES. Correspondence to: Sherman Levy, Suite 635, Washington Bldg., 15th and New York Ave. NW., Washington, D.C., 20005.

3,823,720. SURGICAL DRAIN. D. E. Tribble, M.D. Correspondence to: Nathaniel A. Humphries, Esq., Suite 310, 1730 Rhode Island Ave. NW., Washington, D.C., 20036.

The following 2 patents are offered by: Abram Berland et al. Correspondence to: Woodhams, Blanchard and Flynn, 2026 Rambling Road, Kalamazoo, Mich., 49008.

3,738,583. APPARATUS FOR MIXING, BLENDING LIQUEFYING OR CHOPPING.

3,738,585. CHOPPER FOR MEAT AND OTHER FOODS.

The following 2 patents are offered by: Russell H. James, Box 25, Main St., Voluntown, Conn., 06384.

3,771,606. AUTOMATIC FIRE EXTINGUISHING SYSTEM.

3,810,511. AUTOMATIC FIRE EXTINGUISHING SYSTEM.

General Electric Company prepares to grant nonexclusive licenses under the following 31 patents upon reasonable terms to domestic manufacturers.

Application for licenses under the following 31 patents should be addressed to: Group Patent Counsel, Major Appliance Business Group, General Electric Company, Appliance Park, Louisville, Ky., 40225.

3,511,415. WATER COOLER.

3,624,742. SELF-CLEANING GAS OVEN WITH HEAT EXCHANGER.

3,640,089. HOUSEHOLD REFRIGERATOR WITH EXTERIOR ICE SERVICE.

3,645,249. GAS COOKTOP WITH INTEGRAL BURNERS.

3,727,563. INCINERATOR.

3,732,462. BALLAST APPARATUS FOR OPERATING A PAIR OF DISCHARGE LAMPS.

3,737,823. INTEGRAL ELECTRICAL COIL.

3,745,499. VOLTAGE STABILIZING TRANSFORMER.

3,757,686. INCINERATOR.

3,757,707. INCINERATOR.

3,760,314. TRANSFORMER WITH IMPROVED ARRANGEMENT FOR PROVIDING A GROUNDING CONNECTION.

3,760,316. TRANSFORMER COIL ASSEMBLY.

3,766,794. SHAFT ROTATION REVERSING DEVICE.

3,772,585. CAPACITY COMPENSATION AND DISCRIMINATION CIRCUITS FOR HIGH VOLTAGE POWER SUPPLY.

3,777,677. INCINERATOR.

3,780,342. BALLAST APPARATUS FOR STARTING AND OPERATING ARC LAMPS.

3,783,588. POLYMER FILM ELECTRET AIR FILTER.

3,801,867. DIRECT CURRENT ENERGIZATION OF GASEOUS DISCHARGE LAMPS.

3,803,862. REFRIGERATOR INCLUDING AUTOMATIC ICE MAKER.

3,804,249. AIR DRUM SORTER FOR SOLID WASTE.

3,804,341. WASTE FOOD DISPOSER.

3,804,483. UNIT-HANDLED ROLLER ASSEMBLY FOR PLASTIC TUBS.

3,805,637. CONTROL KNOB WITH VARIABLE CORE DEPTH.

3,806,090. MEANS FOR MANIPULATING MODULAR FURNITURE SYSTEM COMPONENTS.

3,807,418. DISHWASHER WITH SOIL DETECTING MEANS.

3,809,451. RACK LEVEL ADJUSTMENT SYSTEM IN A DISHWASHER.

3,811,600. TREATING AGENT DISPENSER FOR AUTOMATIC WASHING MACHINE.

3,811,746. TORSIONALLY REINFORCED, SKELETAL SUPPORT FRAME FOR PLASTIC TUBE.

3,812,316. DOOR SEAL GASKET FOR COMBINED MICROWAVE AND SELF-CLEANING OVEN.

3,813,192. CENTERING SPRING ARRANGEMENT FOR OSCILLATORY COMPRESSORS.

3,814,550. MOTOR ARRANGEMENT AND LUBRICATION SYSTEM FOR OSCILLATORY COMPRESSOR.

RCA Corporation offers to grant non-exclusive licenses on reasonable terms and conditions under the following 27 patents.

Inquiries respecting licenses under RCA patents should be addressed to RCA Corporation, Staff Vice President, Domestic Licensing, 30 Rockefeller Plaza, New York, N.Y., 10036.

3,799,539. CARD STACKER HAVING ROTATABLE BUMPER TO STOP CARD TRAVEL.

3,799,642. HOLOGRAPHIC RECORDING ON PHOTOCHROMIC LITHIUM NIOBATE.

3,799,881. CATHODOCHROMIC CATHODE RAY TUBE AND METHOD FOR PREPARING CATHODOCHROMIC SODALITE FOR SAID TUBE.

3,814,501. LIQUID-CRYSTAL DISPLAY DEVICE AND METHOD OF MAKING.

3,814,633. THERMO-ELECTRIC MODULAR STRUCTURE AND METHOD OF MAKING SAME.

3,814,904. CRYPTOGRAPHICALLY CODED CARDS EMPLOYING SYNTHETIC LIGHT MODIFYING PORTION.

3,814,980. S-CORRECTED WAVEFORM GENERATOR.

3,815,037. CURRENT TRANSLATING CIRCUITS.

3,815,051. CONTROLLED OSCILLATOR.

3,815,054. BALANCED, LOW IMPEDANCE, HIGH FREQUENCY TRANSMISSION LINE.

3,816,336. NOVEL ELECTRO-OPTIC DEVICES.

3,816,761. COMPARATOR CIRCUITRY.

3,816,765. DIGITAL INTERFACE CIRCUIT FOR A RANDOM NOISE GENERATOR.

3,816,891. METHOD OF REBUILDING A CATHODE-RAY TUBE.

3,817,320. PASSIVE COOLER.

3,818,242. HIGH-SPEED LOGIC CIRCUITS.

3,818,262. TARGETS FOR TELEVISION PICKUP TUBES.

3,819,012. MERCHANDISE HANDLING AND IDENTIFYING SYSTEM.

3,819,911. IDENTIFICATION CARD DECODER.

3,820,155. TELEVISION RECEIVER SERVICE ADJUSTMENT SYSTEM.

3,820,157. COLOR TELEVISION.

3,820,395. FLOWMETER.

3,821,039. METHOD OF EPITAXIALLY DEPOSITING A SEMICONDUCTOR MATERIAL ON A SUBSTRATE.

3,821,617. FILM TYPE CAPACITOR AND METHOD OF ADJUSTMENT.

3,821,728. GLICH FREE VECTOR GENERATION.

3,821,814. APPARATUS FOR PROVIDING INDIVIDUAL ADJUSTMENT OF MOVABLE MULTIPLE TRANSDUCERS IN A PLURAL TAPE CARTRIDGE PLAYER.

Re. 27,935. LSI ARRAY AND STANDARD CELLS.

Eastman Kodak Company announces that non-exclusive licenses are available to responsible applicants under the following 32 patents.

Applications for licenses may be addressed to the Director, Patent Department, Eastman Kodak Company, 343 State St., Rochester, N.Y., 14650.

3,512,976. AMMONIUM AND METAL SULFITES AS STABILIZERS OF LIGHT SENSITIVE SYSTEM.

3,476,562. LIGHT SENSITIVE COMPOSITION COMPRISING AN ORGANIC AMINE AND AN ORGANIC HALOGEN COMPOUND IN A HYDROPHILIC BINDER.

3,512,977. CARBONYL-BISULFITE COMPLEX STABILIZATION OF LIGHT SENSITIVE SYSTEMS.

3,544,320. STABILIZATION OF LIGHT SENSITIVE FILM WITH A PEROXIDE, PERCHLORATE OR PERBORATE.

3,544,321. STABILIZATION OF ORGANIC PHOTOSENSITIVE MATERIAL.

3,503,742. DESENSITIZATION OF PHOTOSENSITIVE MATERIALS BY SUBJECTING THE NON-IMAGE AREAS TO AMMONIA.

3,565,628. DYE SENSITIZED LIGHT SENSITIVE SYSTEMS INCORPORATING AN IODIDE.

3,485,629. PHOTO PROCESS.

3,503,745. DYE SENSITIZATION OF LIGHT SENSITIVE SYSTEMS.

3,650,755. POSITIVE-MODE PHOTOGRAPHIC PROCESS AND COMPOSITION.

3,600,179. ORGANIC PHOTOMATERIAL OF INCREASED CONTRAST.

3,544,322. PHOTOSENSITIVE DISPERSION IN A HYDROPHILIC BINDER INCORPORATING A STABILIZER.

3,607,266. IMAGE INTENSIFICATION PROCESS FOR SENSITIZED FILMS.

3,615,430. IMPROVED IMAGE-INTENSIFICATION FOR SENSITIZED FILMS.

3,526,598. MANUFACTURE OF MAGNETIC RECORDING MEDIA.

3,650,860. METHOD OF MAKING PRINTED CIRCUITS.

3,611,420. CURIE POINT RECORDING BY UTILIZATION OF SELECTIVE COOLING.

3,601,091. MAGNETIC PRINTOUT EQUIPMENT

3,611,421. RECORDING BY VARYING THE LOCATION OF A MAGNETIC SPOT.

3,582,877. THERMAL MAGNETIC INFORMATION RECORDING.

3,633,545. MAGNETIC PRINTOUT EQUIPMENT.

3,717,459. METHOD OF IMAGING INVOLVING PREHEATING USING INTERDIGITATED ELECTRODES, A PHOTOCONDUCTIVE LAYER AND A MAGNETIC IMAGING LAYER.

3,717,460. METHOD OF IMAGING USING INTERDIGITATED ELECTRODES, A PHOTOCONDUCTIVE LAYER AND A MAGNETIC IMAGING LAYER.

3,707,001. MAGNETIC IMAGING METHODS AND APPARATUS.

3,683,405. MAGNETIC DEFORMATION RECORDING.

3,693,183. MAGNETIC PRINTING UTILIZING THERMAL GRADIENTS.

3,757,353. INFORMATION RECORDING BY ARTICLE ORIENTATION.

3,778,373. IRON CONTAINING FERROMAGNETIC CHROMIUM OXIDE.

3,778,145. MAGNETIC IMAGING.

3,803,633. METHODS, APPARATUS AND MEDIA FOR MAGNETICALLY RECORDING INFORMATION.

3,795,009. INFORMATION RECORDING METHODS, APPARATUS AND MEDIA.

3,815,987. METHOD OF IMAGING USING INTERDIGITATED ELECTRODES, A PHOTOCONDUCTIVE LAYER AND A MAGNETIC IMAGING LAYER.

PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF AUGUST 17, 1974

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	10-9-73
GENERAL ORGANIC CHEMISTRY, GROUP 120—R. F. BURNETT, Acting Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	7-12-73
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Fore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	11-16-73
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. L. LEAVITT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	9-18-73
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	8-27-73
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	1-9-74
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	3-1-73
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	11-2-73
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	7-2-73
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	12-13-73
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	3-16-73
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—G. M. FORLENZA, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	9-10-73
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	10-29-73
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. PULFREY, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	11-2-73
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	11-9-73
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	12-3-73

Expiration of patents: The patents within the range of numbers indicated below expire during September 1974, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,804,620 to 2,807,803, inclusive
Plant Patents..... Numbers 1,638 to 1,645, inclusive

DEFENSIVE PUBLICATIONS

PUBLISHED SEPTEMBER 3, 1974

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent Office makes no assertion as to the novelty of the disclosed subject matter.

T926,001
CROSS-LINKABLE COMPOSITIONS

Karl Brack, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Continuation of application Ser. No. 140,,993, May 6, 1971, which is a continuation-in-part of abandoned application Ser. No. 811,204, Mar. 27, 1969. This application Oct. 19, 1972, Ser. No. 298,895

Int. Cl. C08g *41/04*

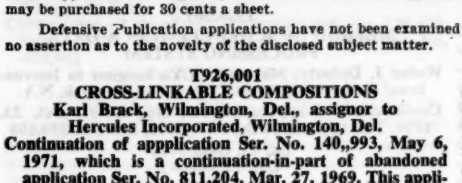
U.S. Cl. 260—858

No Drawing. 24 Pages Specification

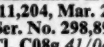
Cross-linkable, storage stable polymer compositions can be prepared from the following ingredients

(a) an ethylenically unsaturated polymer such as an unsaturated polyurethane, alkyd resin, or butadiene polymer or copolymer;

(b) a small amount of a precursor of a polyfunctional nitrile N-oxide or nitrile imine having a formula selected from



where Z is



Y is —NO_2 or a halide radical; R is a hydrocarbon, halogenated hydrocarbon, hydrocarbon-oxy-hydrocarbon, hydrocarbon-thio-hydrocarbon or hydrocarbon-sulfonyl-hydrocarbon radical; R′ is a hydrogen, alkyl, cycloalkyl, aryl, alkaryl, or aralkyl radical; R″ is an alkyl, cycloalkyl, aryl, alkaryl, or aralkyl radical; X is a halide radical; and *x* is an integer from 2 to 5;

(c) an amount of a solid vicinal epoxide in excess of that required to convert the said precursor to the corresponding polyfunctional nitrile N-oxide or nitrile imine. The above described storage stable polymer compositions cross-link when heated at a temperature of about 70° C. to about 180° C. and are useful in sealant, adhesive and coating formulations.

T926,002
THERMAL CHLORINATION OF BUTADIENE-1,3

Kenneth C. Eberly and Edward Leo Kay, Akron, Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Continuation of application Ser. No. 177,128, Sept. 1, 1971, which is a continuation of application Ser. No. 799,962, Feb. 17, 1969. This application Nov. 17, 1972, Ser. No. 307,731

Int. Cl. C07c *21/20*

U.S. Cl. 260—655

No Drawing. 7 Pages Specification

Butadiene-1,3 is thermally chlorinated in the vapor phase to produce 1-chlorobutadiene-1,3. The butadiene-1,3 is brought into contact with chlorine, in the presence of an inert diluent, in a reaction zone at a temperature of from 300° to 600° C., preferably from 350° to 550° C. From five to 20 moles of butadiene-1,3 are present per mole of chlorine, and from five to 25 moles of the inert diluent per mole of chlorine. The reaction products are removed from the reaction zone and cooled. The 1-chlorobutadiene-1,3 portion is then separated from the reaction products. Unreacted butadiene-1,3 and the inert diluent may be recycled. The reaction is preferably performed continuously.

T926,003
POLYPHASE LOGICAL CIRCUIT EMPLOYING COMPLEMENTARY MISFET'S

Kosei Nomiya, 2–47–16 Eifuku, Suginami-ku; Yoshikazu Hatsukano, 1211 Gakuennishi-machi, Kodaira-shi; and Suichi Torii, 1503 Josuihon-cho, Kodaira-shi, all of Tokyo, Japan

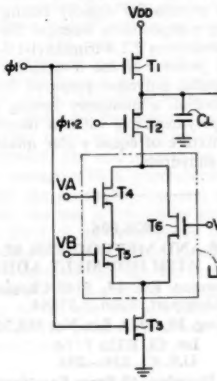
Filed July 23, 1973, Ser. No. 381,484

Claims priority, application Japan, Aug. 25, 1972, 47/84,574

Int. Cl. H03k *19/08, 19/20;* G11c *19/00*

U.S. Cl. 307—205

2 Sheets Drawing. 10 Pages Specification



A complementary MOS logic circuit has a reduced number of transistors. A P-channel MOSFET and an N-channel MOSFET are connected in series with a logical block of a predetermined logical expression between one terminal of a power source and the logical block and between the logical block and the other terminal of the power source, respectively. Means is provided which drives the P-channel and N-channel MOSFETs by a first clock pulse. Means is provided which establishes a current path between the logical block and an output terminal of the complementary MOS logical circuit or between the connection point of the logical block and P-channel MOSFET and the output terminal at timings of the first clock pulse and a second clock pulse differing in phase therefrom.

T926,004

MASTIC OF INORGANIC INSULATING CEMENT POLY(m - PHENYLENE ISOPHTHALAMIDE) FIBERS, AND WATER

Thomas Edward Pavey, 3619 Harris Ave., Richmond, Va. 23223

Filed Aug. 14, 1973, Ser. No. 388,136
Int. Cl. C08g *51/04, 51/24*
U.S. Cl. 260—29.2N
No Drawing. 6 Pages Specification

A reinforced mastic for sealing cracks in insulation, especially in insulation for heated piping. The mastic comprises water, a quick-drying insulating cement, and reinforcing fibers of poly (m-phenylene isophthalamide). The mastic has excellent resistance to thermal degradation from high temperatures and incurs little cracking. The fibers are preferably short-length cut fibers, while the cement is usually an inorganic silicate-containing material. The cement and the fibers are dry-mixed (up to about 2% fibers can be used based on weight of cement) and then water added. The resulting mastic can then be applied in the same manner as nonreinforced insulating "mud."

T926,005

PROCESS FOR RAPIDLY CURING UNSATURATED POLYESTER MOLDING COMPOSITIONS WHEREIN THE UNSATURATED POLYESTER IS PREPARED FROM 2,2,4-TRIMETHYL-1,3-PENTANEDIOL

John R. Dombroski, 124 Bloomingdale, Apt. E-49, Kingsport, Tenn. 37660

Filed Aug. 15, 1973, Ser. No. 388,690
Int. Cl. C08f *21/00*
U.S. Cl. 260—861
No Drawing. 5 Pages Specification

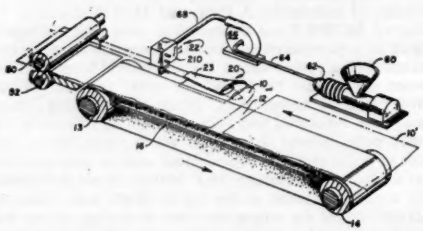
Disclosed is a process for rapidly curing unsaturated polyester molding compositions wherein the unsaturated polyester is prepared from 2,2,4-trimethyl-1,3-pentanediol. According to the process of the invention there is contacted an unsaturated polyester prepared from 2,2,4-trimethyl-1,3-pentanediol, a monomer having at least one olefinic group copolymerizable with the unsaturated polyester and an admixture of equal molar quantities of styrene and maleic anhydride.

T926,006

APPARATUS AND METHOD FOR SEAMING MATERIAL WITH HOT MELT ADHESIVE

Larry B. Newman, Rte. 14, 5745 Chestnut Hill, Kingsport, Tenn. 37664

Filed Aug. 20, 1973, Ser. No. 389,754
Int. Cl. B32b *7/14*
U.S. Cl. 156—291
2 Sheets Drawing. 12 Pages Specification



An apparatus and method for bonding plies of sheet material, especially fabric material, using a hot melt adhesive applied from a dual-opening nozzle are disclosed. An in-line sequence of operations includes bringing a ply of sheet material into overlying, aligned position with another ply, applying hot melt adhesive simultaneously to each of the plies immediately as it is extruded, and finally pressing the plies together prior to solidification of the adhesive.

T926,007

METHOD OF SCHEDULING IN A DATA PROCESSING SYSTEM

Walter J. Doherty, Mahopac, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of application Ser. No. 83,394, Oct. 23, 1970. This application Sept. 17, 1973, Ser. No. 398,608
Int. Cl. G06f *9/12*
U.S. Cl. 444—1
18 Sheets Drawing. 46 Pages Specification

		LEVEL	PTR	TSA	GUARD	MMPS	PAUSE	ABORT	BTR	TEST	HTRE	TAMP	APCHR	PC	HCLK	LWCK	PRJ1	PRJ2	PRJ3	PRJ4
STARTING SET	SYSOPERQ	00	C5	0026	01	20	FF	00	0000	00	00	00	00	00	00	0A	16	16	23	00	00	00	00
	INTERACTIVE	01	18	0010	01	10	FF	01	0000	00	47	51	3D	08	80	0A	17	17	24	1F	1F	1F	1F
	INTERACTIVE	02	18	0010	01	10	FF	02	0000	00	47	51	3D	08	80	0A	17	17	24	1F	1F	1F	1F
	INTERACTIVE	03	18	0010	01	10	FF	03	0000	00	47	51	3D	08	80	0A	17	17	24	1F	1F	1F	1F
	INTERACTIVE	04	18	0010	01	10	FF	04	0000	00	47	51	3D	08	80	0A	17	17	24	1F	1F	1F	1F
	INTERACTIVE	05	18	0010	01	10	FF	05	0000	00	47	51	3D	08	80	0A	17	17	24	1F	1F	1F	1F
	INTERACTIVE	06	18	0010	01	10	FF	06	0000	00	47	51	3D	08	80	0A	17	17	24	1F	1F	1F	1F
	INTERACTIVE	07	18	0010	01	10	FF	07	0000	00	47	51	3D	08	80	0A	17	17	24	1F	1F	1F	1F
	INTERACTIVE	08	18	0010	01	10	FF	08	0000	00	47	51	3D	08	80	0A	17	17	24	1F	1F	1F	1F
	INTERACTIVE	09	18	0010	01	10	FF	09	0000	00	47	51	3D	08	80	0A	17	17	24	1F	1F	1F	1F
	BULK I/O	0A	04	0026	01	20	FF	0A	0000	00	0A	0A	0A	0A	00	01	1A	1A	22	0A	0A	0A	0A
	BATCH	0B	10	0013	01	10	FF	0B	012F	01	4C	35	35	0B	80	0A	18	18	27	0B	0B	0B	0B
	BATCH	0C	10	0013	01	10	FF	0C	012F	01	4C	35	35	0C	80	0A	18	18	27	0C	0C	0C	0C
	BATCH	0D	10	0013	01	10	FF	0D	012F	01	4C	35	35	0D	80	0A	18	18	27	0D	0D	0D	0D
	BATCH	0E	10	0013	01	10	FF	0E	012F	01	4C	35	35	0E	80	0A	18	18	27	0E	0E	0E	0E
	BATCH	0F	10	0013	01	10	FF	0F	012F	01	4C	35	35	0F	80	0A	18	18	27	0F	0F	0F	0F
	BATCH	10	10	0013	01	10	FF	10	012F	01	4C	35	35	10	80	0A	18	18	27	10	10	10	10
	BATCH	11	10	0013	01	10	FF	11	012F	01	4C	35	35	11	80	0A	18	18	27	11	11	11	11
	BATCH	12	10	0013	01	10	FF	12	012F	01	4C	35	35	12	80	0A	18	18	27	12	12	12	12
	BATCH	13	10	0013	01	10	FF	13	012F	00	4C	35	35	13	80	0A	18	18	27	13	13	13	13
	LOGON	14	03	0026	02	20	FF	14	0000	00	14	14	14	14	00	0A	10	10	21	14	14	14	14
	LOGOFF	15	04	0026	02	20	FF	15	0000	00	15	15	15	15	80	0A	1E	1E	20	15	15	15	15
HOLDING INTERLOCK SET	SYSOPERQ	16	00	0013	01	20	FF	16	012F	00	00	00	16	00	00	0A	16	16	23	00	00	00	00
	INTERACTIVE	17	02	0013	01	10	FF	17	012F	00	47	28	17	08	00	0A	17	17	24	1F	1F	1F	1F
	INTERACTIVE	18	02	0013	01	20	FF	18	012F	00	46	28	18	08	00	0A	18	18	25	1F	1F	1F	1F
	INTERACTIVE	19	03	0013	01	30	FF	19	012F	00	4A	2C	19	08	00	0A	19	19	26	1F	1F	1F	1F
	BULK I/O	1A	03	0013	01	20	FF	1A	012F	00	0A	0A	1A	0A	00	0A	1A	1A	22	1A	1A	1A	1A
	BATCH	1B	04	0013	01	10	FF	1B	012F	00	4C	35	1B	08	00	0A	1B	1B	27	1B	1B	1B	1B
	BATCH	1C	04	0013	01	30	FF	1C	012F	00	33	36	1C	13	00	0A	1C	1C	28	1C	1C	1C	1C
	LOGON	1D	01	0013	01	20	FF	1D	012F	00	14	14	1D	14	00	0A	10	10	21	14	14	14	14
	LOGOFF	1E	03	0013	01	20	FF	1E	012F	00	15	15	1E	15	00	0A	1E	1E	20	15	15	15	15
PREJUDICE	WRITE	1F	01	0013	01	23	FF	1F	0000	00	1F	08	08	00	0A	17	17	24	1F	1F	1F	1F	1F
WAITING FOR INTERLOCK SET	LOGOFF	20	06	0013	01	20	FF	20	0000	23	15	15	15	15	80	0A	1E	1E	20	15	15	15	15
	LOGON	21	06	0013	01	20	FF	21	0000	23	14	14	14	14	80	0A	10	10	21	14	14	14	14
	BULK I/O	22	06	0013	01	20	FF	22	0000	23	0A	0A	0A	0A	80	0A	1A	1A	22	0A	0A	0A	0A
	SYSOPERQ	23	06	0013	01	20	FF	23	0000	07	00	00	00	00	80	0A	16	16	23	00	00	00	00
	INTERACTIVE	24	06	0013	01	10	FF	24	0000	23	47	28	3D	06	00	0A	17	17	24	1F	1F	1F	1F
	INTERACTIVE	25	06	0013	01	20	FF	25	0000	23	47	28	3D	0C	80	0A	18	18	25	1F	1F	1F	1F
	INTERACTIVE	26	06	0013	01	30	FF	26	0000	23	28	2D	3F	06	80	0A	19	19	26	1F	1F	1F	1F
	BATCH	27	06	0013	01	10	FF	27	012F	23	33	35	27	08	80	0A	1B	1B	27	08	08	08	08
	BATCH	28	06	0013	01	30	FF	28	012F	23	33	35	28	13	80	0A	1C	1C	28	13	13	13	13

A schedule table in a programming system for controlling the selection of a task and the execution of the task is provided. The table comprises a plurality of fields. Each of the fields is provided with parameters to enable the above-mentioned control. These parameters are chosen to implement the principles of "working set size" and "balanced core time." A first set of parameters, termed the "Starting Set," are employed to handle new inputs from the terminal. The Starting Set functions to control responsiveness by yielding control to new inputs, controlling task growth in real memory by folding, and sorting long running tasks by working set size. A second set of parameters, termed the "Looping Set," controls system efficiency and throughput by using balanced core time to favor efficient programs, estimating the working set time at each time slice, and delaying long running tasks to improve responsiveness. Third, fourth, and fifth sets of parameters

termed the "Await," "Holding," and "Waiting-for-Interlock" sets control special programs and special conditions such as interlock handling for all programs.

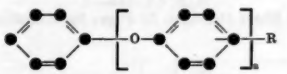
T926,008
COPOLYESTER MOLDING COMPOSITIONS OF IMPROVED PROCESSABILITY

James C. Weaver, 720 Teasel Drive, Apt. A3-5, and Robert L. Combs, 4509 Chickasaw Road, both of Kingsport, Tenn. 37660

Continuation of abandoned application Ser. No. 295,622, Oct. 6, 1972. This application Dec. 3, 1973, Ser. No. 420,982

Int. Cl. C08g *39/10*
U.S. Cl. 260—860
No Drawing. 7 Pages Specification

Copolyesters of bisphenol A with terephthalic and isophthalic acids wherein the terephthalate moiety comprises from about 40 to about 75 mole percent of the acid portion, blended with from about 5 to about 20 percent by weight based on total composition of (1) one or more of the poly(phenyl ethers) of the formula



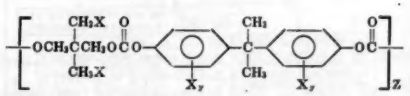
or their isomers, wherein n=1–4 and R is selected from H, halogen, phenyl, or lower alkyl of 1–4 carbons substituted phenyl, or (2) p-quaterphenyl exhibit improved processability by way of reduction in necessary processing temperatures and pressures and retain a high level of mechanical properties in the molded article.

T926,009
FIRE-RETARDANT POLYCARBONATES

Jurgen H. Exner, 1823 Eastlawn, and Eric R. Larsen, 314 W. Meadowbrook, both of Midland, Mich. 48640

Filed Jan. 28, 1974, Ser. No. 437,424
Int. Cl. C08d *7/10*
U.S. Cl. 260—45.7 R
No Drawing. 6 Pages Specification

Polycarbonates are rendered fire retardant by admixing therewith a fire-retarding compound of the general formula



where X is Br or Cl, y is an integer from 0 to 4 and Z is greater than 1.

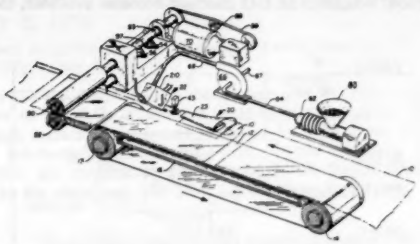
T926,010
APPARATUS AND METHOD FOR SEAMING MATERIAL WITH HOT MELT ADHESIVE

Robert M. Elliott, Rte. 4, Wines Circle, Blountville, Tenn. 37617; Cecil W. Dolen, 1805 Manor Court, Apt. C, Kingsport, Tenn. 37660; and Ernest L. Myers, Rte. 1, Hiltons, Va. 24258

Continuation of abandoned application Ser. No. 231,844, Mar. 6, 1972. This application Jan. 9, 1974, Ser. No. 438,106

Int. Cl. B29c *27/10*
U.S. Cl. 156—202
4 Sheets Drawing. 16 Pages Specification

An apparatus and method for bonding plies of sheet material, especially fabric material, using a hot melt adhesive are disclosed. An in-line sequence of operations includes bringing a ply of sheet material into overlying, aligned position with another ply, applying a bead of hot melt adhesive to one of the plies at a position where the seam is desired, and finally pressing the plies together prior to solidification of the adhesive to cause the hot melt to partially penetrate the plies. Provision is made for quickly

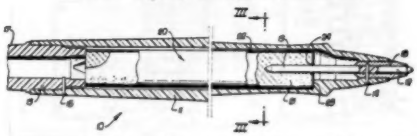


and accurately beginning and terminating the bead of hot melt adhesive.

T926,011
INK RESERVOIR FOR WRITING INSTRUMENTS

Daniel J. Kun, Los Angeles, and Lotfi Hafez Lotfallah, Hollywood, Calif., assignors to The Gillette Company, Santa Monica, Calif.

Filed Feb. 11, 1974, Ser. No. 441,123
Int. Cl. B43k *5/14, 5/20*
U.S. Cl. 401—132
1 Sheet Drawing. 6 Pages Specification



A reservoir for writing instruments employing liquid inks is disclosed wherein the reservoir has a puncturable seal at the end nearest the point of the writing instrument, such puncturable seal preventing leakage of ink contained in the reservoir. The reservoir, in general, consists of a bundle of fibers which can be made of thermoplastic material, said bundle having an outer wrapping of a film of plastic which can be cellophane or, in the alternative, the thermoplastic fibers of the reservoir can be sintered to form said outer layer or film to prevent leakage of the ink to the outside. The end nearest the point is sealed to prevent ink leakage with a puncturable seal (i.e. a seal that the point can penetrate), the seal being plastic, wax or, preferably, the seal is formed by applying heat to the ends of the fibers of the reservoir in order to sinter the same. After the fibers are sealed at the end thereof, the writing nib is inserted through the puncturable seal and into the fibers per se in order to permit flow of ink from the reservoir to the nib, the seal at the end conforming to the shape of the point to maintain the seal and prevent leakage of ink.

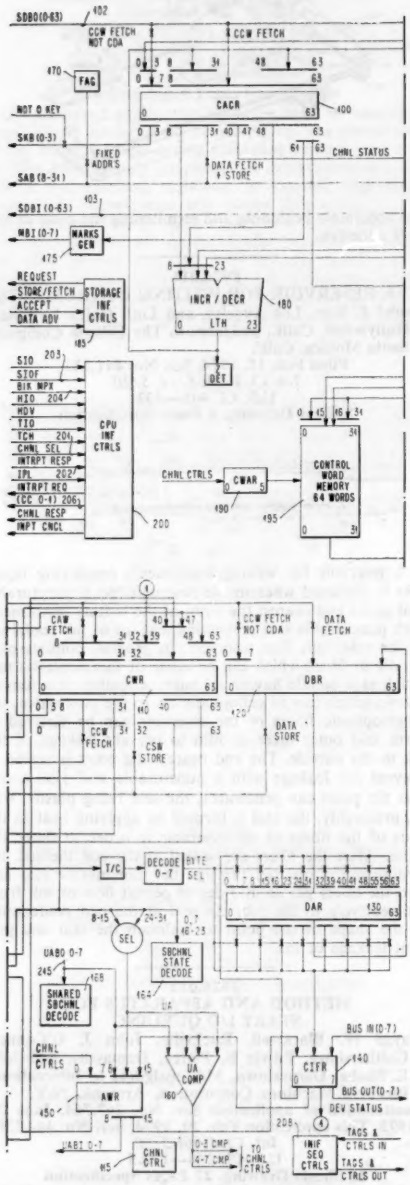
T926,012
METHOD AND APPARATUS FOR START I/O QUEUING

Wayne W. Blackwell, Rockville, John J. O'Connell, Gaithersburg, Edwin B. Pierce, Damascus, and John E. Shabe, Darnestown, Md., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of application Ser. No. 267,754, June 30, 1972. This application Feb. 20, 1974, Ser. No. 444,230
Int. Cl. G06f *3/00*
U.S. Cl. 340—172.5
14 Sheets Drawing. 27 Pages Specification

A device is disclosed which allows a processor to initiate a START I/O operation without waiting for the completion of the connection between the channel and the desired input/output (I/O) unit. In the event that the I/O interface is busy the processor is released and the START I/O instruction is queued in the channel until the

I/O interface becomes available at which time the START I/O instruction is again initiated without processor interaction. Whenever an I/O interface becomes available, the

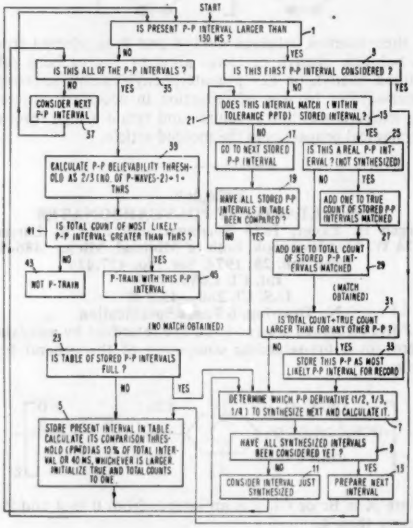


queued instructions are polled to determine if one has been queued for the particular unit. A priority means is included which causes the queued instructions to be reinitiated in a FIFO order.

T926,013
DIMETHYL 5-BROMOISOPHTHALATE
Benjamin Thompson, 2204 Montrose Drive, Kingsport, Tenn. 37664
Filed Feb. 22, 1974, Ser. No. 444,938
Int. Cl. C07c *69/80*
U.S. Cl. 260—475 R
No Drawing. 3 Pages Specification

This invention relates to dimethyl 5-bromoisophthalate, which is useful as an intermediate in the preparation of monomers, such as 5-(4-sodiosulfophenoxy) isophthalate, said monomers being used to impart basic dyeability to polyester fibers.

T926,014
ROUTINE FOR IDENTIFYING A P-WAVE TRAIN
Raymond E. Bonner, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Continuation of abandoned application Ser. No. 212,154, Dec. 27, 1971. This application Feb. 28, 1974, Ser. No. 446,848
Int. Cl. G06f *15/42*
U.S. Cl. 444—1
1 Sheet Drawing. 20 Pages Specification


START
IS PRESENT P-P INTERVAL LARGER THAN 130 MS ?
IS THIS ALL OF THE P-P INTERVALS ?
IS THIS FIRST P-P INTERVAL CONSIDERED ?
CONSIDER NEXT P-P INTERVAL
DOES THIS INTERVAL MATCH (WITHIN TOLERANCE PPTD) STORED INTERVAL ?
GO TO NEXT STORED P-P INTERVAL
IS THIS A REAL P-P INTERVAL ? (NOT SYNTHESIZED)
CALCULATE P-P BELIEVABILITY THRESHOLD AS 2/3 (NO. OF P-WAVES-2)+1= THRS
HAVE ALL STORED P-P INTERVALS IN TABLE BEEN COMPARED ?
ADD ONE TO TRUE COUNT OF STORED P-P INTERVALS MATCHED
IS TOTAL COUNT OF MOST LIKELY P-P INTERVAL GREATER THAN THRS ?
ADD ONE TO TOTAL COUNT OF STORED P-P INTERVALS MATCHED
NOT P-TRAIN
P-TRAIN WITH THIS P-P INTERVAL
(MATCH OBTAINED)
(NO MATCH OBTAINED)
IS TOTAL COUNT+TRUE COUNT LARGER THAN FOR ANY OTHER P-P ?
IS TABLE OF STORED P-P INTERVALS FULL ?
STORE THIS P-P AS MOST LIKELY P-P INTERVAL FOR RECORD
DETERMINE WHICH P-P DERIVATIVE (1/2, 1/3, 1/4) TO SYNTHESIZE NEXT AND CALCULATE IT
STORE PRESENT INTERVAL IN TABLE, CALCULATE ITS COMPARISON THRESHOLD (PPWDIAS 10 % OF TOTAL INTERVAL OR 40 MS, WHICHEVER IS LARGER), INITIALIZE TRUE AND TOTAL COUNTS TO ONE
HAVE ALL SYNTHESIZED INTERVALS BEEN CONSIDERED YET ?
CONSIDER INTERVAL JUST SYNTHESIZED
PREPARE NEXT INTERVAL

The figure shows a programming routine for automatically processing an electrocardiograph signal in a digital computer to determine whether a regularly spaced train of P-waves is present in the previously found P-like bumps or waves of the signal. The respective P-to-P time intervals between successive P-like waves of the signal are sequentially compared to each of the different P-to-P time intervals previously stored in a table of P-to-P time intervals. Each time a P-to-P time interval fails to match, within a predetermined degree of tolerance, intervals previously stored in the table, it is added to the table as a new interval. Each time an interval is added to the table, synthesized fractional subintervals thereof are likewise compared and added, if they fail to match. A separate count is maintained of the number of times each interval in the table is matched. The count of the interval which is matched most often is compared with a believability threshold to determine whether a regularly spaced train of P-waves is present.

REISSUES

SEPTEMBER 3, 1974

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

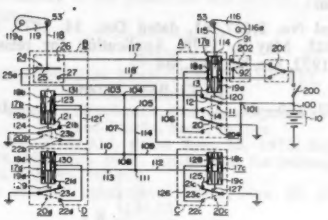
28,142
AUTOMOTIVE DOOR LOCK

Kenichi Kazaoka, Kariya, Japan, assignor to Aisin Seiki Company Limited, Kariya-shi, Japan

Original No. 3,593,816, dated July 20, 1971, Ser. No. 787,439, Dec. 30, 1968. Application for reissue July 20, 1973, Ser. No. 381,136

Int. Cl. E05b *65/36, 65/42*

U.S. Cl. 180—113 13 Claims



An automotive door lock arrangement comprising a door lock of latch type provided for each of all doors of an automotive vehicle, said arrangement being characterized by the provision of: a solenoid coil assembly comprising a locking coil means and an unlocking coil means provided for each of said doors, an automatic switch means connected with the driver's solenoid assembly for sensing starting of said vehicle, electric wiring means connecting all of said solenoid assemblies with each other, said door locks being actuated thereby into their locking position when the driver's locking coil means is energized for locking by receiving an electrical signal depending upon said energization.

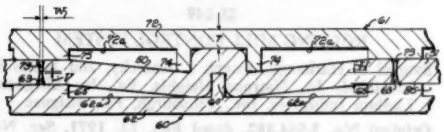
28,143
CUTTING AND SCORING DIES

Albert J. Sarka, Fairview Park, Ohio, assignor to Harris-Intertype Corporation, Cleveland, Ohio

Original No. 3,485,146, dated Dec. 23, 1969, Ser. No. 700,538, Jan. 25, 1968. Application for reissue Mar. 6, 1972, Ser. No. 231,996

Int. Cl. B31b *1/16*

U.S. Cl. 93—58 R 10 Claims



Apparatus for cutting and scoring sheet-like material comprises a pair of die plates. Each of the die plates includes at least one severing element. The severing elements on the die plates are cooperable to cut sheet-like material positioned therebetween. The severing elements on the die plates are mirror images of each other, and are in the form of narrow blades projecting above the main surface of the respective die plates. The blades have a substantially aligned relationship when operating to effect the severing of material positioned therebetween. The die plates may also have scoring elements thereon.

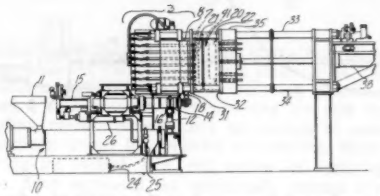
28,144
INJECTION MOLDING NOZZLE WITH FLOW-CONTROL MECHANISM

John Goron, Cranford, N.J., by Midland-Ross Corp., Cleveland, Ohio, assignee

Original No. 3,561,062, dated Feb. 9, 1971, Ser. No. 774,851, Nov. 12, 1968. Application for reissue Dec. 11, 1972, Ser. No. 314,106

Int. Cl. B29f *1/00*

U.S. Cl. 425—191 5 Claims



A manifold and nozzle assembly within injection molding equipment which will normally comprise an extruder, an accumulator, a manifold, and a plurality of nozzles projecting through the manifold. This invention is especially directed to flow-control valve mechanism within each nozzle in addition to shutoff valve mechanism.

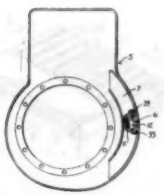
28,145
RECTIFIER NETWORK ASSEMBLY

Paul A. Tharman, Milwaukee, Wis., assignor to Briggs & Stratton Corporation, Wauwatosa, Wis.

Original No. 3,678,366, dated July 18, 1972, Ser. No. 167,691, July 30, 1971. Application for reissue Oct. 25, 1972, Ser. No. 300,527

Int. Cl. H02m *7/00*

U.S. Cl. 321—8 R 6 Claims



In a rectifier assembly comprising diodes that have wire terminals projecting axially in opposite directions

from a cylindrical body, permanent connections between diode terminals comprise crimp connectors integral with terminal members such as plug jacks. The terminal members are seated in bores in a plug body which is partway received in an open topped metal casing. The casing is filled with epoxy that embeds the diodes, their connections with the terminal members and part of the plug body.

28,146

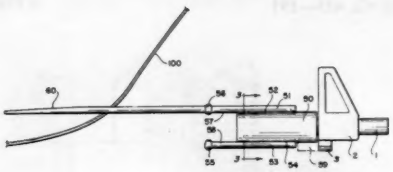
BALLISTIC CUTTING IMPLEMENT

Daniel D. Musgrave, 8201 Caraway St., Cabin John, Md. 20731

Original No. 3,657,835, dated Apr. 25, 1972, Ser. No. 32,523, Apr. 28, 1970. Application for reissue Feb. 5, 1974, Ser. No. 439,832

Int. Cl. F41c *27/00*

U.S. Cl. 42—90 **4 Claims**



An implement is mounted on the muzzle of a firearm to permit severing a strand of wire or other obstacle by discharging a bullet. The implement includes windlassing means to take up slack in the strand and thereby assure alinement of the strand with the bore of the firearm. The windlassing means is compatible with a variety of obstacle materials of different configurations and dimensions.

28,147

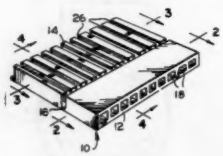
ELECTRICAL TERMINAL HOUSING HAVING HINGE AND ADJACENT LOCK PROJECTION

Eldon P. Hoffman, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Original No. 3,582,863, dated June 1, 1971, Ser. No. 806,432, Mar. 12, 1969. Application for reissue Mar. 19, 1973, Ser. No. 342,902

Int. Cl. H01r *11/02;* **H05k** *1/04*

U.S. Cl. 339—59 M **19 Claims**



An electrical terminal housing is described which includes a first end portion having a row of chambers containing the connector terminals connected by a hinge portion to a second end portion having a row of slots releasably holding the connectors so that a locking projection thereon extends into notches formed in the connectors in one position of the hinge to prevent removal of the connector terminals from such chambers. In another position of the hinge, the lock projection disengages from the connector notches and such connectors are released from the slots to enable removal of the connector terminals from such chambers. The entire terminal housing may be molded as a single piece of polypropylene plastic including a flexible hinge of reduced thickness.

28,148

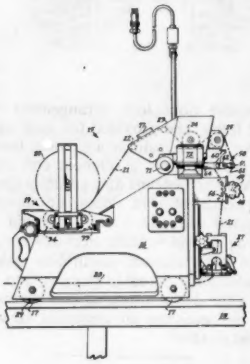
APPARATUS FOR ALIGNING A WEB OF PATTERNED SHEET MATERIAL

Robert W. Benson and Robert G. Reed, Nashville, Tenn., assignors to Cutters Machine Company, Inc., Nashville, Tenn.

Original No. 3,627,301, dated Dec. 14, 1971, Ser. No. 34,425, May 4, 1970. Application for reissue Aug. 31, 1972, Ser. No. 285,304

Int. Cl. B65h *29/46*

U.S. Cl. 270—31 **11 Claims**



A machine for spreading patterned cloth having a longitudinal line or linear division, including a photoelectric line or stripe sensing head, a transversely shiftable cloth support, and an electric motor responsive to the stripe sensing head for moving the cloth support transversely in a direction to maintain a line in said cloth on a true longitudinal course.

28,149

ROLLING MILL CONTROL SYSTEM

Samuel S. Harbaugh, Joseph J. Kasecky, and James B. Murtland, Jr., Natrona Heights, Pa., by Allegheny Ludlum Industries, Inc., Pittsburgh, Pa., assignee

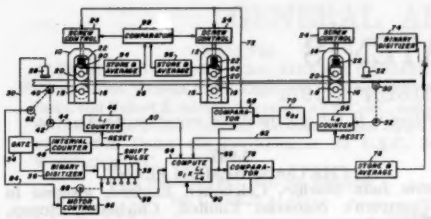
Original No. 3,564,882, dated Feb. 23, 1971, Ser. No. 723,121, Apr. 22, 1968. Application for reissue Oct. 1, 1973, Ser. No. 402,510

Int. Cl. B21b *37/00*

U.S. Cl. 72—8 **13 Claims**

Described is a rolling mill control system for tandem rolling mills based on the constant volume principle and wherein anticipated or predicted exit gage is calculated from measured entry gage and the length of material entering and leaving the mill. This predicted exit gage is

compared with desired exit gage as determined by the mill operator to generate an error correction signal to the



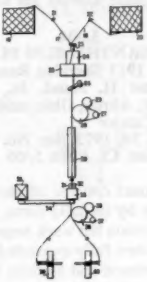
mill screwdowns if the predicted and desired gages are not the same.

28,150
PROCESS FOR PRODUCING A NOVEL TEXTURED YARN

Michel Buzano, Villeurbanne, France, assignor to Rhone-Poulenc-Textile, Paris, France

Original No. 3,683,611, dated Aug. 15, 1972, Ser. No. 878,274, Nov. 20, 1969. Application for reissue June 7, 1973, Ser. No. 367,959
Claims priority, application France, Nov. 22, 1968, 175,055
Int. Cl. D02g *1/02*
U.S. Cl. 57—157 TS **2 Claims**

Continuous filaments of thermoplastic material are provided wherein such filaments contain a helicoidal curling and/or a residual twist couple. The filaments have a cross section which is substantially the shape of a bean, such cross section varying slightly along the length of the filaments. The filaments are produced by a process which comprises creating an initial twist in an individual strand or in an assembly of a number of strands having a high count per strand and a small number of strands per assembly; thermally treating the twisted strands or assembly of strands; blocking such twist at a point; and separating the single strand or assembly of strands at such point and winding them up. Such a process is characterized in that the point of separation of the yarn is



located immediately at the outlet of the heat treatment yarns while the yarns are still in a plastic state. The apparatus necessary for carrying out such process comprises a delivery means for providing the yarn by unwinding, means for separating the strands or assembly of strands, means for initiating the twisting, means for heating the twisted yarn, and means for receiving the yarn. Such apparatus can additionally contain drawing means.

PLANT PATENTS

GRANTED SEPTEMBER 3, 1974

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,604
CHRYSANTHEMUM PLANT

Leonard E. Carrier, 1911 Sheridan Road, Encinitas, Calif. 92024, and Walter H. Jessel, Jr., Doylestown, and William E. Duffett, Akron, Ohio; said Jessel and Duffett assignors to said Carrier

Filed Jan. 24, 1973, Ser. No. 326,540
Int. Cl. A01h *5/00*

U.S. Cl. Plt.—74 **1 Claim**

1. A new and distinct cultivar of chrysanthemum characterized particularly by its daisy form, intense red-bronze flower color; approximate ten week response period; flower size of 3¼"–3½" when fully expanded; suggested flowering period in the northern and western United States from May through June and October through November, and by its intolerance of high temperatures for bud development.

3,605
CHRYSANTHEMUM PLANT

Walter H. Jessel, Jr., Doylestown, and William E. Duffett, Akron, Ohio, assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Jan. 29, 1973, Ser. No. 327,806
Int. Cl. A01h *5/00*

U.S. Cl. Plt.—77 **1 Claim**

1. A new and distinct cultivar of chrysanthemum characterized particularly as to uniqueness when compared to the parent cultivar Southern Comfort by its flower which is approximately 1"–1½" larger in diameter; by its superior grade performance, grading out with a higher percentage of flowers in the top two grades; approximately 3" to 4" more vigor; a more incurved flower form; approximately 2–3 days later response; improved form retention which provides longer bench life, and by its foliage which is approximately ½" longer in length and ½" greater in width.

3,606
GARDENIA PLANT

Toshio Ishii, Gardena, Calif., assignor to Armstrong Nurseries, Inc., Ontario, Calif.

Filed Mar. 8, 1973, Ser. No. 339,189
Int. Cl. A01h *5/00*

U.S. Cl. Plt.—54 **1 Claim**

A new variety of Gardenia being a sport of the jasminoides species, having highly spicy and sweet-scented blooms which open on the bush a true white, become cream colored after a few days, and then turn golden yellow within eight days after the corolla first opens. Cut flowers change color more rapidly, becoming golden yellow in four days and lasting a week or slightly less. The bloom has no pistils, anthers or stamens. The plant is vigorous, bushy, upright-spreading and abundantly covered with glossy dark green foliage.

3,607
CHRYSANTHEMUM PLANT

Barrie John Machin, Chichester, England, assignor to Frampton's Nurseries Limited, Chichester, Sussex, England

Filed Apr. 12, 1973, Ser. No. 350,626
Int. Cl. A01h *5/00*

U.S. Cl. Plt.—81 **1 Claim**

1. A new and distinct variety of *Chrysanthemum morifolium* Bailey, substantially as shown and described, having an improved breaking action following a pinch and uniform flowering regardless of whether the apical flower on each shoot is disbudded, and characterized particularly as to its novelty by the unique combination of the deep, intense red purple color of its small, hard and crisp flowers which color is resistant to fading under high temperature or low light conditions.

3,608
CHRYSANTHEMUM PLANT

Sing Ling Lee, 206 Sleeper Ave., Mountain View, Calif. 94040

Filed Apr. 13, 1973, Ser. No. 350,910
Int. Cl. A01h *5/00*

U.S. Cl. Plt.—78 **1 Claim**

1. A new and distinct cultivar of chrysanthemum characterized particularly as to its uniqueness when compared to the parent cultivar Jumbo Albatross by its yellow flower color.

3,609
CHRYSANTHEMUM (RED BONANZA)

Leonard H. Shoesmith, Westfield, Woking, Surrey, England, assignor to Pan-American Plant Company, West Chicago, Ill.

Filed May 3, 1973, Ser. No. 356,921
Int. Cl. A01h *5/00*

U.S. Cl. Plt.—82 **1 Claim**

A new variety of chrysanthemum plant of the standard incurved type, suitable for glass house culture, particularly distinguished by its very large globular head of many florets which have a Cardinal Red inside surface color and a Mimosa Yellow reverse side or outer surface color, providing a bright firey appearance for the blossom.

3,610
AFRICAN VIOLET PLANT

Arnold W. Fischer, Isernhagen, Germany, assignor to Geo. J. Ball, Inc., West Chicago, Ill.

Filed May 3, 1973, Ser. No. 356,925
Int. Cl. A01h *5/00*

U.S. Cl. Plt.—69 **1 Claim**

A new variety of African violet plant for glass house and potted plant culture distinguished by its profuse production of large long-lasting flowers, the petals of which exhibit a variety of light to dark combinations of purple colors, the flowers appearing in clusters on sturdy, upright stems. This new plant is also characterized by its early and year around recurrent flowering habit and its condensed and abundant growth of attractive foliage.

PATENTS

GRANTED SEPTEMBER 3, 1974

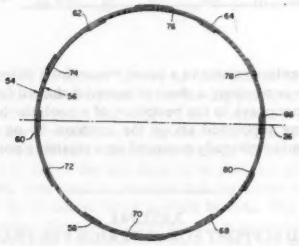
GENERAL AND MECHANICAL

3,832,735

FLEXIBLE JOINT FOR PRESSURIZABLE GARMENT

William Elkins, Canoga Park; Eugene W. Connell, Thousand Oaks, and Robert E. Alesna, Torrance, all of Calif., assignors to The United States National Aeronautics and Space Administration Under the Provisions of 42 U.S.C. 2457, Washington, D.C.

Filed Dec. 11, 1967, Ser. No. 689,455
Int. Cl. A62b *17/00*
U.S. Cl. 2—2.1 A **15 Claims**



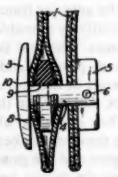
A flexible joint for a pressurizable garment has two fabric layers bonded together. The lay of one layer is straight cut and the other of bias cut. A ring-like tension member covered with Teflon disposed at the minor diameter of each joint convolution, is unrestrained other than being retained thereat in the flexure plane. A compression ring is secured at the major diameter, at certain of the convolutions, preferably alternate ones. A pair of axially disposed cable joint restraints at the convolution periphery are disposed in a plane normal to the flexure plane.

3,832,736

SHIRT CUFF WITH CUFF LINK RETAINER

Frederick E. Schuchman, Jr., Gateway Towers, Pittsburgh, Pa. 15222

Filed Aug. 27, 1973, Ser. No. 391,970
Int. Cl. A41b *7/00*
U.S. Cl. 2—123 **4 Claims**



One side of a shirt cuff has a cuff link retaining member secured between the fabric layers. The rubber-like retaining member is provided with a central hole aligned with the usual openings in the cuff that receive a cuff link, the diameter of the hole being such that the retaining member will grip the cuff link stem extending through it to prevent loss of the link.

3,832,737

SHIRT COLLAR HAVING A DRAINAGE CHANNEL

Leon Podolsky, 77 Wendell Ave., Pittsfield, Mass. 02101

Filed Apr. 25, 1973, Ser. No. 354,285
Int. Cl. A41b *3/00*
U.S. Cl. 2—132 **6 Claims**

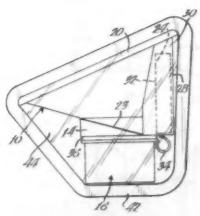
A shirt collar comprising superposed fabric layers stitched together along their edges, and a channel at an edge of the collar adjacent to one or each collar point through which water and dirt between the fabric layers can flow out freely from between the fabric layers when the shirt is hung to dry. The channel may be defined by a discontinuity in the stitching along the edge of the collar, by a short tube incorporated in the edge of the collar, or by a perforated tubular collar stay.

3,832,738

MID-STREAM URINE COLLECTOR

Colonel R. Kliemann, Greenfield, Wis., assignor to Kleen Test Products, Inc., Milwaukee, Wis.

Filed Sept. 13, 1973, Ser. No. 396,882
Int. Cl. E03d *13/00*
U.S. Cl. 4—110 **16 Claims**



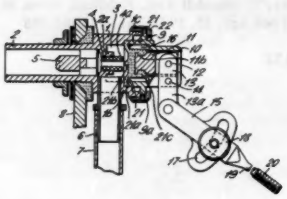
A sanitary liquid collection device comprises a funnel-shaped member releasably connected to the open top of a container. A cap for the container is attached by a flexible member to the container and is held in a downwardly open compartment in the exterior wall of the funnel member. After collection of the liquid sample through the funnel member has been completed, the funnel member is removed from the container, thereby exposing the cap and enabling closure of the container. A visual pour line is provided to assist the user in pouring off excess liquid.

3,832,739

FLUSHING TANK FOR WATER CLOSET OR THE LIKE

Giuseppe Campiglia, Via Oronzo Quarta, 4 Roma, Italy

Filed Feb. 4, 1972, Ser. No. 223,738
Int. Cl. F03d 1/36
U.S. Cl. 4—41 2 Claims



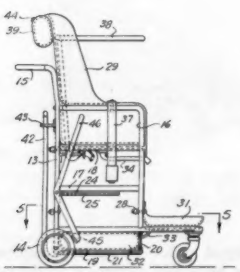
A flushing tank for water closet or other similar container provided with a first device designed to control the water level in said tank and with a second device of the so called "-Sifonic" type designed to control the water flushing into a flushing pipe connected to a water closet bowl or the like characterized by the fact that means are provided for increasing the buoyancy of the outlet ball valve of the device controlling the water flushing and for obtaining a pneumatic watertight closure of said valve against its seat, while the device designed to control the water level into the tank is provided with means for adjusting the maximum water level into said tank and with other means for obtaining a watertight closure of a piston valve in the line from the water supply to a discharge pipe to the bowl and including means to regulate any high pressure source of water.

3,832,740

PORTABLE BATHING CHAIR FOR INVALIDS

Edna M. McClarrin, 1261 N.W. 30th Ter., Fort Lauderdale, Fla. 33311

Filed Jan. 4, 1973, Ser. No. 320,979
Int. Cl. A47k 3/022
U.S. Cl. 4—145 4 Claims



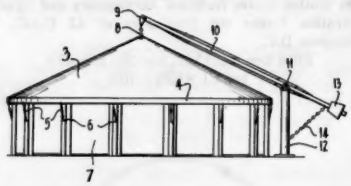
The present invention is directed to a collapsible portable bathing chair for invalids which includes a water tank, with a conduit for feeding water to a sitz bath and foot washing portions of the device. A shower rod is provided for supporting a faucet attached shower head and a drain tank is provided for the discharge of the washing water which collects in the foot rest portion of the device.

3,832,741

SWIMMING POOL COVER

Geoffrey Arthur Ward, 11 Judd Parade, Cheltenham, Victoria, Australia (3192)

Filed June 20, 1973, Ser. No. 371,609
Claims priority, application Australia, July 26, 1972, 9836/72
Int. Cl. E04h 3/16, 3/18
U.S. Cl. 4—172.12 12 Claims



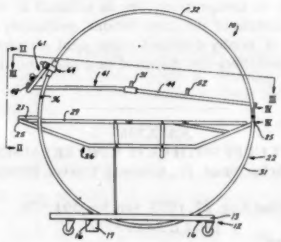
The invention relates to a cover means for a swimming pool or the like comprising a sheet of material shaped for affixture about its periphery to the periphery of a pool, the body of the cover being supported above the contents by an elongated boom member pivotally mounted on a retaining post adjacent the pool.

3,832,742

END SUPPORT FOR ANTERIOR BED FRAME

Homer H. Stryker, Kalamazoo, Mich., assignor to Stryker Corporation, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 260,367, June 7, 1972, abandoned. This application Feb. 26, 1973, Ser. No. 335,480
Int. Cl. A61g 7/10, 7/06
U.S. Cl. 5—62 16 Claims



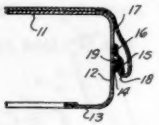
An end support for the anterior frame of a rotatable hospital bed having opposed, relatively movable anterior and posterior patient supporting frames. The end support has a bar which extends between spaced, parallel and generally upright side rings of the bed. The ends of the end support bar are secured to the side rings by lock units. When the lock units are in their unlocked condition, they can slide along the corresponding side rings for adjusting the distance between the end supports, hence, the anterior frame and the posterior frame of the bed. The lock unit includes pin means engageable with the side rings and resiliently urged to remain in any of several selected positions therealong. The end support bar is mounted on the lock units for limited pivotal movement around an axis parallel with the rotational axis of the bed. The end support bar is resiliently biased toward one pivotal limiting position wherein said end support bar overlaps the end of said anterior frame. In a modified embodiment, the end support bar is not resiliently held but is pivotable on the lock unit through an extended angular range, between a limit position determined by an adjustment screw wherein the end support is engageable

with the anterior frame, and a second limit position thereabove and wherein a support lock pin automatically locks the end support bar against pivotal movement in an upwardly extending intermediate position.

3,832,743
BED SHEETS

Saundra L. Smith, 3508 24th St. N.E., Washington, D.C. 20018

Filed May 2, 1972, Ser. No. 249,703
Int. Cl. A47g 9/00
U.S. Cl. 5—334 C 1 Claim

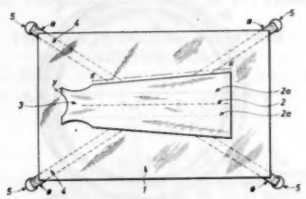


The present invention relates to bed sheets of the type which include a fitted bottom sheet having portions which extend around and under the edges of the mattress to retain the sheet in its correct position on the mattress. A top sheet has a central portion thereof detachably secured to the foot of the fitted sheet to retain the top sheet in its position with respect to the fitted sheet and to prevent the top sheet from being pulled out by excessive force applied thereto. The top sheet and fitted sheet are secured together by a separable fastener such as a "Velcro" fastener or a zipper. The top sheet when disconnected from the fitted sheet will lie completely flat for laundering and pressing and the separable fastener on the fitted sheet is provided with a covering flap to prevent it from being contacted by the sleeper as well as to prevent damage to the fastener during laundering.

3,832,744
SHEET SLEEPING-BAG

Henry R. Krarup, P.O. Box 123, 3900 Godaab, Greenland, Denmark

Filed Oct. 19, 1972, Ser. No. 299,008
Int. Cl. A47g 9/00
U.S. Cl. 5—336 6 Claims

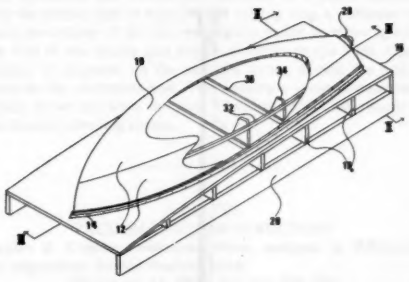


A sheet sleeping-bag provided with openings for accommodating the neck, head and arms designed to prevent a person from leaving the bed and throwing off his bed clothes, while ensuring an optimal lying position, the sleeping-bag being stitched onto a drawsheet by means of at least one piece of fabric, said drawsheet being in turn fastened to a bed, and where said piece of fabric is formed as a triangle, one side of which is stitched onto and along portion of the centre line of the back of the sleeping-bag with the second side thereof being stitched onto and along portion of the centre line of the drawsheet, and where the third side of the triangle extends from the centre line of the drawsheet up towards the centre of the sleeping-bag.

3,832,745
DISPOSABLE INNER MOULD FOR BOATS AND METHOD OF MANUFACTURE

Jan William Dorfman, 36 Madison Ave., Toronto, Ontario, Canada

Filed May 25, 1973, Ser. No. 364,003
Int. Cl. B63b 5/24
U.S. Cl. 9—6 10 Claims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3,832,747

BOLT AND METHOD OF MAKING THE SAME

Erby Roy Nankivell, Jr., and James H. Turner, both of Athens, Tenn., assignors to Plastic Industries, Inc., Athens, Tenn.

Continuation-in-part of Ser. No. 671,433, Sept. 28, 1967, abandoned. This application Feb. 24, 1970, Ser. No. 13,571

Int. Cl. B21k *1/44*; B23g *9/00*

U.S. Cl. 10—27 R 1 Claim

A shank, similar to the shank of a bolt and straight from end to end, is threaded along one end and has its other end knurled or otherwise processed to disturb the surface continuity of the metal, thus providing an irregular surface. A head having a shoulder portion provided with an axial opening is then pushed downwardly into position over the knurled end of the shank. Inward radial pressure is then exerted on the shoulder portions of the shank to cause the metal around the axial opening thereof to be displaced or flow into the adjacent irregularities of the shank. This permanently secures the head to the shank, just as if the two had been integrally formed. The inward radial pressure exerted against the shoulder of the head not only permanently unites the shoulder with the shank but also shapes the shoulder in accordance with any desired cross-sectional shape thereof, such as square, hexagonal, etc.

3,832,748

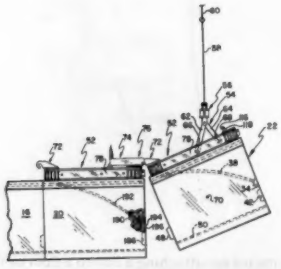
ERECTING SEGMENTAL SPANS

William B. Ogletree, 610 Bradshaw, Corpus Christi, Tex. 78412

Filed Nov. 1, 1972, Ser. No. 302,785

Int. Cl. E01d *1/00*

U.S. Cl. 14—1 17 Claims



There is disclosed a technique for erecting segmental bridge spans. Means are provided for temporarily connecting the segments to each other in preparation for permanently joining the same together. The temporary connectors incorporate a pivotal connection, capable of adjustment under load, allowing relative adjustable pivotal movement between the movable segment and the stationary segment. The adjustable feature of the pivot connection allows the segments to be shifted for close mating engagement.

3,832,749

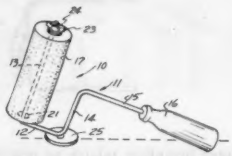
SELF-STANDING PAINT ROLLER

Gary D. Hawk, Iola, Kans., assignor to Harding Development Company, Warren, Mich.

Filed Jan. 5, 1973, Ser. No. 321,539

Int. Cl. B44d *3/28*

U.S. Cl. 15—230.11 4 Claims



An upright, self-standing paint roller formed of a stiff wire bent into a roughly squared U-shape, with one leg being about twice the length of the other and extending through the center of and rotatably supporting a paint applying roller, with the other, short leg having an integral long handle forming extension portion extending roughly parallel to the base of the U-shape, and a support member secured to said base near the bend between the base and short leg so that the paint roller may be supported in an upright position upon the support member and remote end of the handle portion.

3,832,750

HEADLIGHT WIPER

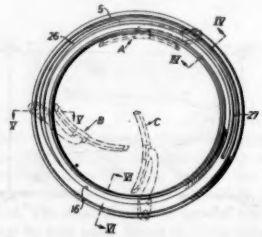
Uro Tapio Jarvinen, Satunavagen 18, and Olli Olavi Salminen, Valstavagen 58, both of 19500 Marsta, Sweden

Filed Mar. 20, 1973, Ser. No. 343,176

Claims priority, application Sweden, Mar. 27, 1972, 3963/72

Int. Cl. B60s *1/20*, *1/44*

U.S. Cl. 15—250.16 4 Claims



A headlight wiper is described comprising a support ring to be mounted in a stationary position on a headlight, a carrier ring rotatably mounted on the support ring, and a wiper arm which is pivotally mounted in the carrier ring and provided with a driver cooperating with a stationary guide on the support ring. The carrier ring is provided with a tooth rim adapted for engagement with a motor operated pinion. The arrangement is such that when the wiper is started the wiper arm will be swung from a substantially tangential rest position to a substantially radial working position in which it will move along the lens of the headlight through the rotary movement imparted to the carrier ring. According to the invention the stationary guide is formed by a guide groove in the support ring

and a portion of the driver projects into the groove for permanent engagement therewith. Said guide groove comprises a portion which extends along a spiral line and, at its inner end, terminates in a continuous circular groove portion in the support ring.

3,832,751

WIPER ARRANGEMENT FOR USE WITH CURVED SURFACES

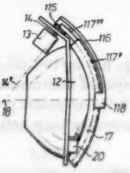
Eckhard Ursel; Horst Seibicke, both of Altschweier, and Willi Schaper, Buhl, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Apr. 28, 1972, Ser. No. 248,541

Claims priority, application Germany, June 9, 1971, 2128677

Int. Cl. B60s *1/32, 1/38*

U.S. Cl. 15—250.23 **10 Claims**



A wiper arrangement is to be used on the lens of a vehicle light. An elongated elastically deformable wiper blade having a lip is provided with the lip being adapted to contact the exposed surface of the lens which is spherically curved. A mounting arm engages the wiper blade and holds the same in position adjacent the surface and a drive shaft is connected with the mounting arm for moving the same, and thereby the wiper blade, in alternately reversed directions over the surface. The axis of the drive shaft is oriented either to intersect or at least to extend in direction substantially towards the center of curvature of the lens.

3,832,752

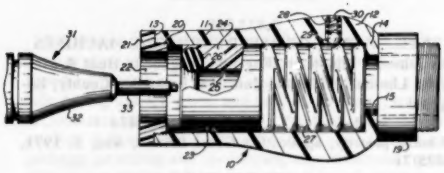
PEN POINT CLEANER

George Dale Prochnow, 2930 N. 21 St. Pl., Phoenix, Ariz. 85016

Filed Mar. 21, 1973, Ser. No. 343,426

Int. Cl. A47l *5/04*; B43k *13/00*

U.S. Cl. 15—341 **6 Claims**



A cleaner for the pen points of the so-called Rapidograph type fountain pens and which cleaner operates on the vacuum principle. A fountain pen of the character intended to be cleaned by the device of this invention includes a conical end member from which projects a tubular pen point. The cleaning device comprises a tubular body to one end of which is attached a receiver for ink drawn from pens that have been cleaned. An annular abutment ring is mounted in the body at the end remote from the ink receiver. A piston is slidable in the bore of the tubular body. The piston is hollow and carries a sealing ring at its end adjacent to the abutment. The piston is biased towards the abutment by an expansion coil spring in the body. The latter is provided with a vent adjacent to the end on which the ink receiver is mounted. A one-way check valve is associated with this vent.

In operation the conical end member of a pen is inserted into the piston until it engages the sealing ring. Continued inward movement of the pen causes the piston to move against the bias of the spring and expels air through the vent. Upon release of pressure on the pen the spring moves the piston towards the abutment end. This creates a vacuum condition which draws ink from the pen. The flow of the ink results in the desired cleaning action.

3,832,753

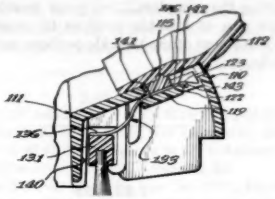
VACUUM CLEANER STRUCTURE

Stanley R. Crooks, Shakopee, Minn., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Sept. 12, 1972, Ser. No. 288,380

Int. Cl. A47l *9/06*

U.S. Cl. 15—371 **15 Claims**



A vacuum cleaner structure wherein a swivel is retained in association with the nozzle by a swivel retainer removably received in a slot in the nozzle outlet opening. The swivel retainer includes a resilient catch member which may be released to permit removal of the swivel from the nozzle when desired with the retainer being held in locking position by the swivel and nozzle in the assembled arrangement. A spring is provided for biasing the nozzle brush into operative position relative to the nozzle, and in one form of the invention, the spring is retained in association with the nozzle by the swivel retainer.

3,832,754

GRAVITY ACTUATED HINGED DOOR MOUNTING

Klaus Paul Maertin, 10 Weerroona Ave., Elanora Heights, New South Wales, Australia (2101), and Stewart Cecil Combs, 32 Forestville Ave., Forestville, New South Wales, Australia (2087)

Filed July 14, 1972, Ser. No. 271,677

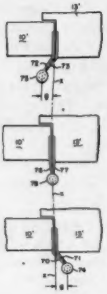
Claims priority, application Australia, Aug. 11, 1971, 5864/71; Aug. 26, 1971, 6057/71; Oct. 26, 1971, 6791/71

Int. Cl. E05f *1/06*

U.S. Cl. 16—152 **5 Claims**

A gravity actuated hinged mounting for a door comprises two or more hinges which individually have the appearance of

conventional butt hinges, but the several hinges in each mounting are individually different so that their respective pivot axes define the hinge axis of the door along a line which is inclined to the vertical. This result is accomplished by construction of the individual hinges to locate their respective



knuckle portions in laterally spaced vertical planes and by constructing the complementary pivot members which connect each pair of knuckle portions to provide for relative rocking movement of the knuckle portions as the door swings on its inclined axis.

3,832,755

DOOR HINGES

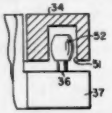
Klaus Paul Maertin, 10 Weeroona Ave., Elanora Heights, Australia (2101), and Stewart Cecil Combs, Forestville, New South Wales, both of Australia (2087)

Filed July 14, 1972, Ser. No. 271,678

Claims priority, application Australia, Aug. 11, 1971, 5864/71; Aug. 26, 1971, 6057/71; Oct. 26, 1971, 6791/71

Int. Cl. E05f 1/06; E05d 5/12

U.S. Cl. 16—156 **26 Claims**



This invention relates to apparatus for pivotally mounting a door, window or like closure in a frame, comprising at least a top and a bottom hinge construction, each having the appearance of a conventional hinge, but at least the top and the bottom constructions having substantially different pivotal means permitting adaption thereof for a number of relatively different functions. Each said pivotal means includes means defining at least a pin and a complementary recess adapted to locate relative to each other in such a manner as to permit relative departure of the recess from a position coaxial with said pin and relative rotation about a predetermined axis.

3,832,756

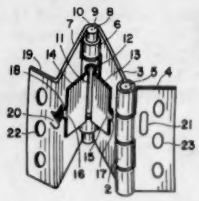
DUAL ACTION HINGE FOR FOLDING DOORS

Hyok Sang Lew, 1620 E. Blacklidge Dr. No. 6, Tucson, Tex. 85719

Filed July 2, 1973, Ser. No. 375,337

Int. Cl. E05d 3/06

U.S. Cl. 16—163 **9 Claims**



A folding door hinge having two pivot points and including a resilient member disposed intermediate two of the flaps extending from one of the pivot points provides a two step closing operation and prevents a snap action closing of a folding door.

3,832,757

PROCESS FOR PRODUCING CLOTHES-PINS BY EXTRUSION OF PLASTIC MATERIAL AND THE CLOTHES PINS OBTAINED

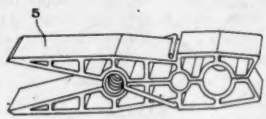
Benito D'Eugenio, Via Maurisio 13, Vicenza, Italy

Filed Mar. 20, 1973, Ser. No. 343,009

Claims priority, application Italy, Mar. 20, 1972, 85538/72

Int. Cl. D06f 55/00

U.S. Cl. 24—137 A **3 Claims**



A process for producing clothes-pins and a clothes-pin formed by the extrusion of a strip of plastics material, transversely cutting said strip into a plurality of clothes-pin elements and assembling said elements in pairs to form a clothes-pin.

3,832,758

TEXTILE FABRIC OR PAPER SHRINKING MACHINES

Jack Johnson, Middleton, England, assignor to Hunt & Moscrop Limited, Middleton Junction, Lancaster County, England

Filed July 17, 1972, Ser. No. 272,474

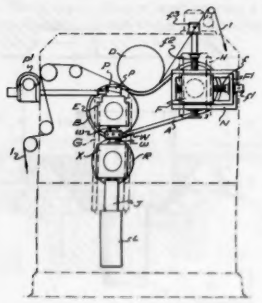
Claims priority, application Great Britain, Aug. 5, 1971, 36825/71

Int. Cl. D06c 21/00

U.S. Cl. 26—18.6 **5 Claims**

A textile fabric or paper shrinking machine of the type in which an endless belt travels over front and back rollers and in contact with a pressure roller driven at a speed different from the belt, the textile fabric or paper being shrunk by the contraction of the belt after passing the nip between the pressure roller and the front roller, wherein the pressure roller is driven by an electric motor through a reduction gear or by a commutator motor with a second drive taken through the reduction

gear and a positive infinitely variable speed gear and a second reduction gear to the front or back roller to drive the pressure



roller at 20 percent – 25 percent above the speed of the front or back roller to produce a texturized or stretch fabric or paper web.

3,832,759

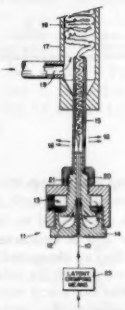
PROCESS AND APPARATUS FOR TEXTURIZING YARN

Brewster B. Eskridge; Roger H. Fink, both of Asheville, and Boyce M. Lyon, Candler, all of N.C., assignors to Akzona Incorporated, Asheville, N.C.

Continuation-in-part of Ser. No. 33,785, May 1, 1970, abandoned. This application Mar. 23, 1972, Ser. No. 237,295

Int. Cl. D02g *1/20, 1/12*

U.S. Cl. 28—1.3 **17 Claims**



Continuous thermoplastic multifilament yarn is texturized by aspirating such yarn into a pneumatic jet with dry gas followed by passing said yarn through said jet into a crimping tube having exhaust ports, and then passing said yarn into an accumulator chamber with steam being supplied thereto to produce bulked yarn which can then be passed to a take-up package; annealing and air tangling after-treatment, prior to take-up, are optional. Yarn so processed travels at a comparatively high and increased rate of speed to thus achieve a more effective processing system. A conventional mechanical stuffer box can be incorporated between said accumulator chamber and the take-up package to further increase bulking prior to annealing and air tangling which are optional, depending on the feeder yarn and/or the desired bulk level. The feeder yarn to be processed may also be pretreated to have a latent crimp which is developed and stabilized during the texturizing process.

3,832,760

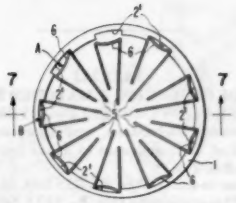
VANE GRID STRUCTURES AND METHOD OF MAKING SAME

Russell F. Scott, Jr., Palo Alto, Calif., assignor to Varian Associates, Palo Alto, Calif.

Division of Ser. No. 69,677, Feb. 4, 1970, abandoned, which is a continuation-in-part of Ser. No. 58,422, July 27, 1970, abandoned. This application Nov. 13, 1972, Ser. No. 306,963

Int. Cl. H01j *9/18*

U.S. Cl. 29—25.14 **3 Claims**



A vane grid is disclosed wherein a plurality of inwardly directed vanes are bonded at their roots to the sidewalls of an array of longitudinal slots in the inside wall of a grid ring. The grid is conveniently fabricated by machining a plurality of grid rings, stacking the grid rings, and broaching the array of slots in the inside walls of the stacked grid rings. The grid rings are then plated, the vane members assembled, and the assemblies are heated to melt the plating to form, when cooled, a bonded joint between the root portions of the vanes and the grid ring.

3,832,761

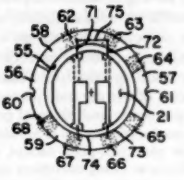
METHOD OF ASSEMBLY OF CRYSTAL FILTERS

Desmond F. Sheahan, San Carlos, and George C. Callander, Palo Alto, both of Calif., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Division of Ser. No. 156,275, June 24, 1971, Pat. No. 3,723,920. This application Sept. 5, 1972, Ser. No. 285,989

Int. Cl. B01j *17/00*

U.S. Cl. 29—25.35 **12 Claims**



In this filter, each one of two coupled resonators is formed on a different crystal wafer. Each wafer is accurately positioned with respect to one longitudinal groove in the periphery of a ceramic ring. The wafer is supported in the central opening in the ring with wires which are soldered to metalized areas of the ring and to resonator lead patterns on the wafer to form a resonator assembly. Each resonator is tuned to operate at a predetermined frequency by locating the associated resonator assembly in a masking jig with respect to the one groove on the ring to accurately align the resonator electrode patterns with holes in the jig. A metal film is evaporated onto a resonator electrode to adjust the resonant frequency of the associated resonator to be equal to the predetermined frequency. In a packaged filter the resonator assemblies and electrically conductive spacers are alternately stacked on a header having a pair of posts protruding therefrom that are located in longitudinal grooves in the ceramic rings and openings in the spacers for supporting the stacked elements. Extensions and

tabs on the spacers are soldered to the alignment posts and metalized areas on the rings, respectively, to ground the resonators and spacers to the header. The spacer sandwiched between the rings provides isolation between the resonators on adjacent wafers. A discrete chip capacitor is connected to a resonator electrode and a metalized area on a ring which is grounded to the header. The resonator electrodes are also selectively interconnected and connected to insulated lead pins in the header to produce a filter structure. The packaged filter is hermetically sealed by cold welding a cover to the header.

3,832,762

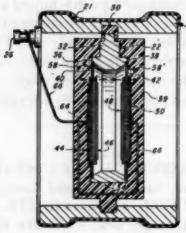
METHOD OF PRODUCING A MATCHED PARAMETER ACCELERATION CANCELLING HYDROPHONE

Roy C. Johnston, Richardson, and Lawrence B. Sullivan, Plano, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation-in-part of Ser. No. 255,503, May 22, 1972, abandoned. This application Dec. 26, 1973, Ser. No. 427,881

Int. Cl. B01j *17/00*

U.S. Cl. 29—25.35 **5 Claims**



A seismic cable having minimum response to speed changes is provided. The cable includes a plurality of miniature seismic pressure sensitive detectors coupled one to another in such a manner so as to minimize through cancellation undesired electrical disturbance resulting from speed changes. Each detector includes transducers of the ceramic piezoelectric crystal type having matched geometric and physical property parameters. Each ceramic piezoelectric crystal is provided with metal electrodes such as, for example, gold, nickel, platinum, or rhodium which, in addition to being corrosion resistant and inactive as to the constituents in the ceramic material, are insoluble in liquids encountered by the detector in its use environment to avoid dendrite type growth of the metal through minute cracks developing in the ceramic which causes short circuits in the piezoelectric element.

3,832,763

METHOD OF DROP-FORGING SINTERED WORKPIECES

Franz Schober, Muenchen-Obermenzing, Germany, assignor to Bayerisches Leichtmetallwerk Graf Bluecher von Wahlstatt KG, Munich, Germany

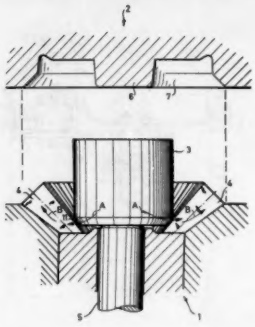
Filed Apr. 13, 1973, Ser. No. 350,802

Claims priority, application Germany, Apr. 22, 1972, 2219856

Int. Cl. B21k *1/30*

U.S. Cl. 29—159.2 **10 Claims**

The present drop-forging method of presintered workpieces employes a drop-forging die which has a dimension transverse to the direction of motion of a die member larger than the dimension of a preshaped blank. The shape of the blank is



selected to deviate from the shape of the drop-forging die to such an extent as to assure a massive deformation in the following drop-forging step.

3,832,764

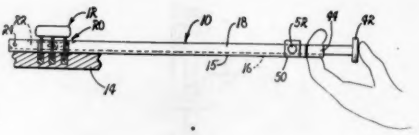
TOOL FOR USE IN LIFTING PIN-SUPPORTED OBJECTS

James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; Ronald A. Marzek, 5162 Stratford Ave., Westminster, Calif. 92683, and William S. Read, 3336 Sparr Blvd., Glendale, Calif.

Filed June 18, 1973, Ser. No. 370,872

Int. Cl. B25b *27/02*

U.S. Cl. 29—203 H **5 Claims**



A tool for use in lifting a pin-supported, electronic package mounted in juxtaposition with the surface of an electronic circuit board. The tool is configured to be received beneath a pin-supported package and is characterized by a manually operable linkage, including an elongated body within which an elongated, rigid link is supported for axial reciprocation and a pivotal link pinned to the body and supported for oscillation induced in response to axial motion imparted to the rigid link. A lifting plate is pivotally coupled to the distal end of the pivotal link so that oscillatory motion imparted to the pivotal link serves to move the plate vertically for elevating the plate into lifting engagement with the electronic package positioned thereabove.

3,832,765

APPARATUS FOR REMOVING INSERTS FROM AN ELECTRICALLY INSULATING STRIP

Dieter Klinger, Aistaig, Germany, assignor to Mayer & Cie., Maschinenfabrik, TailfingenWuertt, Germany

Filed Mar. 1, 1973, Ser. No. 336,955

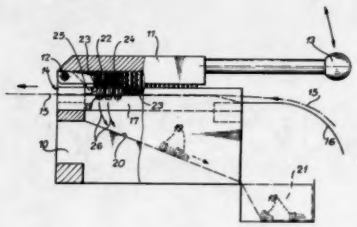
Claims priority, application Germany, Mar. 30, 1972, 2215650

Int. Cl. H05k *3/04*

U.S. Cl. 29—203 B **8 Claims**

Apparatus for removing inserts such as electrical contacts arranged in parallel rows on an electrically insulating strip.

The apparatus includes a support for the strip, the support being provided with parallel channels for the reception of the heads of the inserts, there being parallel laterally spaced bars for supporting the strip and for defining the channels therebetween. There is provided a head bearing a plurality of punch members disposed in the same relationship as the in-



sert-receiving zones of the strip, and a stop for engaging the forward row of inserts on the strip to position it correctly with respect to the punches. Upon the advance of the head toward the strip-supporting body, the punches engage the upstanding ends of the inserts and force the inserts downwardly out of the strip. There is preferably provided a container which automatically receives the inserts removed from the strip.

3,832,766

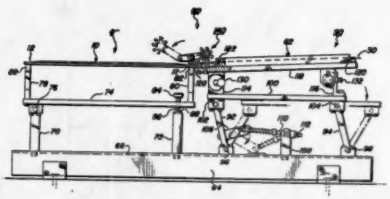
APPARATUS FOR ASSEMBLING A PLATED WIRE MEMORY PLANE

Wendell C. Johnson, Topanga; Nicolas G. Gomez, Los Angeles, and Claude H. Foret, Culver City, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 308,367, Nov. 21, 1972, which is a division of Ser. No. 106,839, Jan. 15, 1971, Pat. No. 3,722,083. This application Nov. 8, 1973, Ser. No. 414,001

Int. Cl. H01f *41/00*

U.S. Cl. 29—203 MM **18 Claims**



A plated wire memory plane includes a support member, an insulator having a plurality of parallel grooves, a plated wire comprising a conductive wire substrate, an annular magnetic coating uniformly deposited in generally all of the preformed grooves, and a substantially U-shaped word drive line laminate. One leg of said word drive line laminate is positioned between the grooved insulator and the support member. The second leg of the word drive line laminate is positioned to overlie the upper surface of the grooved insulator.

3,832,767

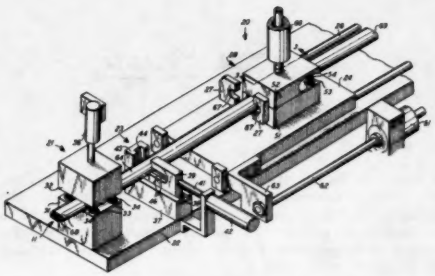
METHOD OF STRIPPING INSULATION

Edwyn H. Petree, Burlington, N.C., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Mar. 27, 1973, Ser. No. 345,382

Int. Cl. B23p *19/02*

U.S. Cl. 29—427 **10 Claims**



A length of severed insulation is stripped from a conductor by applying pressurized fluid between the conductor and the insulation to generate a fluid bearing therebetween and by then moving the insulation from the conductor along the fluid bearing. The insulation may be severed by (1) cutting partially through the insulation and applying pressurized fluid between the conductor and the insulation to expand and rupture the insulation at the cut; by (2) using the pressurized fluid to expand the insulation against a cutting blade; or by (3) using a precision cutting technique without the application of pressurized fluid.

3,832,768

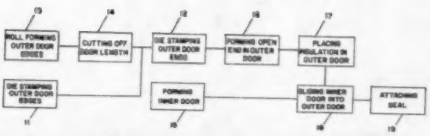
REFRIGERATOR DOOR-MAKING METHOD

Edward H. Smoot, Holcomb, N.Y., assignor to The Schlegel Manufacturing Company, Rochester, N.Y.

Filed Feb. 16, 1973, Ser. No. 333,115

Int. Cl. B23p *19/00*

U.S. Cl. 29—428 **12 Claims**


ROLL FORMING OUTER DOOR STRIPS
CUTTING OFF DOOR LENGTH
DIE STAMPING OUTER DOOR ENDS
FORMING OPEN END IN OUTER DOOR
PLACING INSULATION IN OUTER DOOR
DIE STAMPING OUTER DOOR ENDS
FORMING INNER DOOR
SLIDING INNER DOOR INTO OUTER DOOR
ATTACHING SEAL

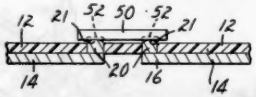
In making a refrigerator door, sheet metal is formed into a box-shaped outer door, and a plastic inner door is molded with side edge flanges shaped to extend under inturned flanges of the outer door. The outer door has an open end to receive the inner door, insulation is placed inside the outer door, and the inner door is slid endwise into the outer door with its edge flanges locked inside the inturned flanges of the outer door. Then a seal is secured around the flange of the outer door, and the opening that receives the inner door is preferably covered over.

3,832,769

CIRCUITRY AND METHOD

Murray Olyphant, Jr., Lake Elmo, and Robert R. Rohloff, Lakeland, both of Minn., assignors to Minnesota Mining and Manufacturing Company, Saint-Paul, Minn.

Filed May 26, 1971, Ser. No. 146,984
Int. Cl. H05k 3/32, 3/36
U.S. Cl. 29—626 18 Claims



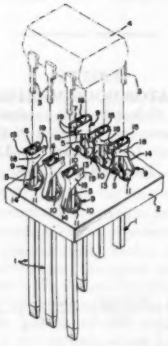
A method for mounting semiconductor chips to printed circuitry via conductive columns which extend through the dielectric substrate and electrically communicate with a predetermined pattern of conductive leads on the opposite surface of the substrate. Printed circuitry useful for practicing the method is also provided.

3,832,770

ELECTRICAL CONNECTORS

Glenn Harlan Gluntz, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Division of Ser. No. 4,662, Jan. 20, 1970, Pat. No. 3,659,243, which is a continuation-in-part of Ser. No. 869,079, Oct. 24, 1969, abandoned. This application Feb. 7, 1972, Ser. No. 223,996
Int. Cl. H01r 9/00
U.S. Cl. 29—630 D 4 Claims



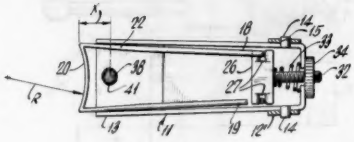
An electrical connector of the receptacle type comprises a mounting panel having electrical posts secured therein at spaced locations. Spring members disposed on sections of the posts extending outwardly from one surface of the panel. Means provided by the sections of the posts and the spring members securing the spring members on the sections. Legs of the spring members biased against contact surfaces of the post sections to define receptacle means and outer ends of the post sections and legs being chamfered to define lead-in means to facilitate movement of contact members with the receptacle means. Maintaining means provided by the spring members for maintaining other legs of the spring members in secured engagement with the post sections and to guide movement of the first-mentioned legs relative to the post sections.

3,832,771

NAIL CLIPPER WITH MEANS TO ADJUST THE CURVATURE OF THE CLIPPER BLADES

J. Robert Morgan, Palmer Hill Rd., Old Greenwich, Conn. 06870

Filed Jan. 2, 1973, Ser. No. 320,085
Int. Cl. A45d 29/02; B26b 19/04
U.S. Cl. 30—28 7 Claims



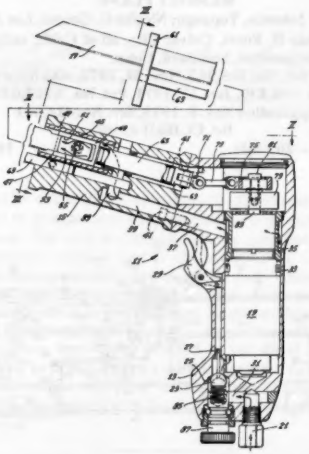
A clipper for shaping nails which includes a pair of cutting heads formed of resilient material and means for adjusting the curvature of the cutting heads.

3,832,772

PNEUMATIC HAND TOOL

Kunio A. Sumida, Los Angeles, Calif., assignor to Shapiro, Leonard U., St. Paul, Minn.

Filed June 2, 1972, Ser. No. 259,309
Int. Cl. B27b 19/08
U.S. Cl. 30—392 4 Claims



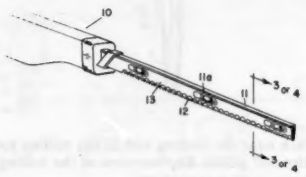
A hand tool, such as a saber saw, in which the motive power is provided by a fluid which actuates a rotary motor. The rotary motor drives an eccentric-universal drive system which converts the rotary output into a linear reciprocation along an axis situated at a predetermined angle relative to the axis of the motor. Air exhausting from the motor cools the bearing surfaces of the reciprocating tool, pressurizes the interior of the housing to prohibit foreign material ingestion, and blows workpiece chips away from the tool housing and the cutting area.

3,832,773

THREE-BLADE ARRANGEMENT FOR ELECTRICALLY POWERED KNIFE

Orville L. Langford, 120 Lakeview, New Braunfels, Tex. 78130

Filed Dec. 21, 1973, Ser. No. 427,046
Int. Cl. B26b 7/00
U.S. Cl. 30—272 A 7 Claims



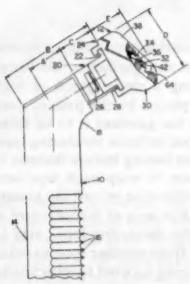
An electrically powered knife includes a casing enclosing an electric motor and a drive assembly for converting rotary motion of the armature shaft into reciprocal motion for a pair of blade holding members, a pair of serated blades adapted to connect with the blade holding members and positioned on both sides of and contiguous with a replaceable thin, flat blade. The serated blades are cooperating first and second support blades defining a channel adapted to receive and provide transverse support for the thin, flat blade.

3,832,774

RAZOR BLADE ASSEMBLY

Roger L. Perry, Lynnfield Center, Mass., assignor to The Gillette Company, Boston, Mass.

Continuation-in-part of Ser. No. 124,069, March 15, 1971, abandoned, and a continuation-in-part of Ser. No. 124,217, March 15, 1971, Pat. No. 3,703,764. This application Dec. 13, 1971, Ser. No. 207,422The portion of the term of this patent subsequent to Nov. 28, 1989, has been disclaimed.
Int. Cl. B26b 21/24, 21/20, 21/54
U.S. Cl. 30—32 12 Claims



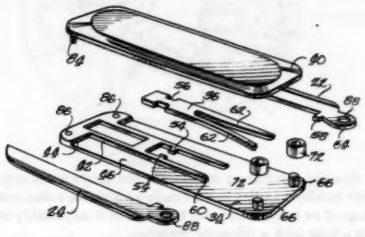
A replaceable blade unit for use in a shaving system includes an elongated body structure having a transversely extending guard surface on its forward edge for contact with the skin, a thin, elongated cutting member permanently fixed to the body structure with its cutting edge disposed parallel to and spaced from the guard surface in shaving relation to the latter, and coupling structure formed in the base of the body structure. The coupling structure defines two recesses that are disposed parallel to the guard surface and extend along the length of the body structure.

3,832,775

FOLDABLE IMPLEMENT AND METHOD OF MANUFACTURE THEREOF

Alwin J. Stahel, II, New Brighton, and Terry N. Nelson, St. Paul, both of Minn., assignors to Arthur Salm Inc., Chicago, Ill.

Filed Aug. 21, 1972, Ser. No. 282,133
Int. Cl. B25b 3/06
U.S. Cl. 30—152 18 Claims



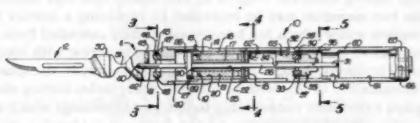
A foldable implement in which one or more tools are pivotally supported in a body, the body assembly being formed into an integral unit from two spaced generally rectangular plastic plates sonically welded together. Preformed pins on one of the plates provide pivots for the tools. Operationally, these pivoted tools are held at open and close positions by unique spring means housed in the body assembly.

3,832,776

ELECTRONICALLY POWERED KNIFE

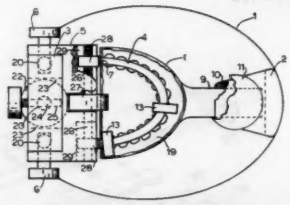
Harold T. Sawyer, 845 Via de la Paz, Pacific Palisades, Calif. 90272

Filed Nov. 24, 1972, Ser. No. 308,952
Int. Cl. B26b 7/00
U.S. Cl. 30—272 11 Claims



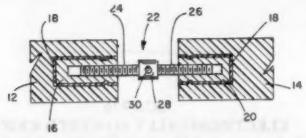
A single blade electronically powered knife has a cylindrical case in which is located a solenoid having a centrally mounted longitudinally oscillating rod. The inner end of the rod is slidably retained in a bearing which has a resilient isolation mounting within the case. On the outer end of the rod is secured a mounting block which carries the knife blade and the mounting block is isolated from the case by a resilient bearing. An electric power source acting through an electronic circuit housed in the case causes the solenoid to reciprocate the mounting block in a longitudinal direction and impart sinusoidal elastic longitudinal wave energy to the knife blade which translates into a cutting and parting knife blade action.

3,832,777
DENTAL RESTORATION JIG
Lawrence E. Tinder, 2900 Sawmill Gulch Rd., Pebble Beach, Calif. 93953
Filed Mar. 13, 1973, Ser. No. 340,937
Int. Cl. A61c *13/00*
U.S. Cl. 32—11 **8 Claims**



A flexibly positioned dental die pin setter with removable die pin holder handles in vertically swivelable relationships to the top of an impression tray holder that is adjustably attachable to a base with a vibrating member.

3,832,778
ORTHODONTIC BIASSING DEVICE
Melvin Wallshein, 8645 Bay Pky., Brooklyn, N.Y. 11230
Filed Nov. 29, 1972, Ser. No. 310,575
Int. Cl. A61c *7/00*
U.S. Cl. 32—14 E **22 Claims**



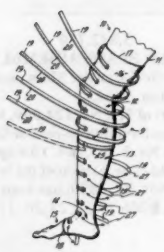
An orthodontic biassing device comprising two spaced orthodontic elements is provided with an aperture in each element. The aperture may be in the form of a sleeve for receiving the body housings of an expansion screw. The sleeves are so configurated so as to interchangeably receive body housings having different lengths so that initial spacings between the two elements may be increased by replacing a shorter expansion screw which has been nearly totally extended from its respective body housings by an expansion screw with longer body housings. According to another embodiment, the spaced elements are in the form of resilient receptacles having elongated extensions connectable to teeth and openings which are configurated to receive the body housings by at least partially deforming the receptacles during insertion. Biassing devices which can be utilized both as expansion or contraction devices are described.

3,832,779
DEVICE FOR MILLING AND TAKING IMPRESSION FOR THE PLACING OF PEG TEETH
Marc Reynaud, 16 Blvd. Gambetta, 38000 Grenoble, France
Filed Feb. 9, 1973, Ser. No. 331,266
Int. Cl. A61c *3/02*
U.S. Cl. 32—48 **4 Claims**

A milling tool for preparing teeth for the placement of artificial peg teeth comprises a shaft provided with a milling cutter comprising a leading end portion of the shaft conically tapered toward a leading end of the milling tool and having a truncated conical surface on which three cutting blades are circumferentially disposed equally spaced. A portion of the truncated

conical surface near the leading end of the milling tool functions as a pilot and guides displacement of the milling tool to position it during milling operations.

3,832,780
DISPOSABLE MEASURING AND FITTING DEVICE FOR SURGICAL GARMENTS
Hector E. Lewis, Cincinnati, Ohio, assignor to Surgical Appliance Industries, Inc., Cincinnati, Ohio
Filed May 11, 1972, Ser. No. 252,483
Int. Cl. A41h *1/02*; G01b *5/08*; A61b *5/10*
U.S. Cl. 33—2 R **6 Claims**

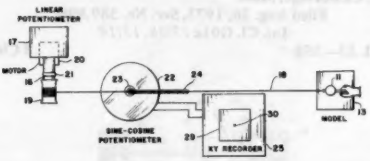


In a body measuring apparatus for measuring and fitting surgical or therapeutic garments, an inexpensive, disposable sleeve comprising a single piece of highly elastic material designed to be placed by the patient over the portion of the body for which the garment is to be fitted. The sleeve has a plurality of spaced inelastic measuring tapes or scales attached thereto, the tapes having indicia thereon to permit the wearer or another person to wrap each tape around the sleeve and note, mark, or otherwise record the measurement of the body circumference. For ease of manufacture of the body measuring apparatus, the measuring tapes may be spaced along and extend laterally from another tape to which they are secured, this latter tape being secured longitudinally to the sleeve along its length.

3,832,781
MEASURING PROBE POSITION RECORDER
Bruce Flagge, Yorktown, Va., assignor to The United States of America as represented by the National Aeronautics and Space Administration, Washington, D.C.
Filed Jan. 12, 1973, Ser. No. 322,998
Int. Cl. G01b *7/28*; G01d *5/16*
U.S. Cl. 33—23 R **1 Claim**

This invention is a device for enabling a person to record the locations of measurements made by a hand-held noncontacting probe. The hand probe is coupled to a linear poten-

tiometer and a sine-cosine potentiometer by means that varies the output of the linear potentiometer proportional to the distance between the hand probe and the linear potentiometer and that varies the output of the sine-cosine potentiometer proportional to the angular movement of the hand probe relative to the sine-cosine potentiometer. The output of the linear potentiometer is applied directly to one input of the sine-cosine potentiometer and is applied through an inverter to the other input or the sine-cosine potentiometer. The cosine and sine outputs of the sine-cosine potentiometer are applied to



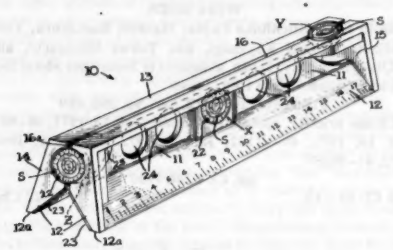
the X and Y outputs, respectively, of an X–Y recorder. Hence, as the hand probe moves over a model the stylus on the X–Y recorder makes corresponding moves over the X–Y recorder. Consequently, the person using the hand probe can move the probe along the outline of the model causing a similar outline to be reproduced on the X–Y recorder. Then the person can make structural measurements on the model and when interesting measurements are made, he can, with the aid of the stylus, mark the points on the recorded outline where these measurements are made.

3,832,782

ALL-CRAFT LEVEL

Vern Harry Johnson, 2104 Johnson Ave., and Robert George Harms, 2613 E. 13th St., both of Cheyenne, Wyo. 82001

Filed Jan. 14, 1972, Ser. No. 217,878
Int. Cl. B43l *7/00;* **G01c** *9/28*
U.S. Cl. 33—88 **20 Claims**



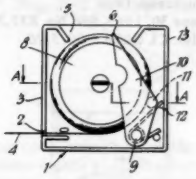
A multiple purpose leveling device for use by craftsmen in all trades, embodying an elongated body having divergingly forked legs coextensive with the body length which enables the leveling device to be held on dead center of pipes and other round objects, and which legs are ruled adjacent planar feet portions, all of which cooperate to act as guides for placement of layout and coordinate lines when pipe layouts are required. Three 360° circular tube spirit level inserts are readily detachably embodied in three 90° diverse planes, and are calibrated so as to be readable from any angular position, whereby by the coordinated use of any two of the three bubbles of the spirit levels, two or more readings can be made simultaneously with one setting. Another important feature resides in a narrow groove provided along the center of the top planar member and continues at right angles down the center of each opposite end piece thereof, whereby pipe fitters and layout men can place the edge of a framing square therein, with the end grooves aiding the locating of centers of round objects such as pipes. The adjacent angularly disposed inside faces of the diverging legs are optionally provided with magnets to enable magnetic attachment of the leveling device to magnetically attractable work members.

3,832,783

EXTENSIBLE STEEL TAPE RULES

Otto Heinz Schreier, Leigh-on-Sea, England, assignor to Fisco Products Limited, Raleigh, Essex, England

Filed Nov. 20, 1972, Ser. No. 307,809
Int. Cl. G01b *3/10*
U.S. Cl. 33—138 **3 Claims**



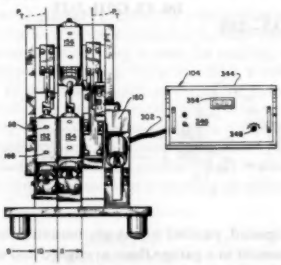
A datum mark carried by the outer end of a pivoted arm which bears against the outermost turn of an extensible steel tape rule mounted on a drum within a casing having a viewing window, may be observed through the viewing window and against the graduations on the tape within the casing. As the diameter of the roll of steel tape on the drum changes due to extension or retraction of the tape, the position of the datum mark changes so that the distance along the tape between the datum mark and the slot through which the tape passes remains substantially constant for all extensions of the tape.

3,832,784

TURBINE VANE PREDICTION AND CLASSIFICATION GAGE AND GAGING METHOD

Ronald L. Samuels, Palos Verdes Peninsula; Wallace M. Porter, Redondo Beach, and Josef E. Friederichs, Los Angeles, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Continuation of Ser. No. 33,345, April 30, 1970, abandoned, which is a continuation-in-part of Ser. No. 868,675, Oct. 23, 1969, abandoned. This application Nov. 29, 1972, Ser. No. 310,564
Int. Cl. G01b *7/28*
U.S. Cl. 33—174 C **7 Claims**



An instrument and method for prediction and classification gaging of production turbine vanes witout distortion of the vanes. In its prediction gaging mode, the instrument gages selected airfoil dimensions of a production tubrine vane and master and provides a figure of merit readout representing the difference between the effective class values of the master and vane resulting from the difference, if any, in their correspond-

ing airfoil dimensions. This figure of merit is converted to an angle at which the class surface of the vane must be machined to provide the vane with a selected class value. In its classification gaging mode, the instrument gages the selected airfoil dimensions and the class face angle of the machined vane and provides a readout representing the actual class value of the machined vane. The airfoil dimensions and class surface are gaged with electrical transducers in such a way that there is no distortion of the master or vane.

3,832,785

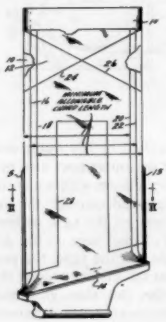
DEVICE FOR INSPECTION OF CAMBERED AIRFOILS

Raymond B. Miller, Princeton, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed June 30, 1969, Ser. No. 837,389

Int. Cl. G01b *5/00, 5/20*

U.S. Cl. 33—174 G **4 Claims**



The disclosure shows a device for inspecting cambered airfoils used in gas turbine engines or the like. The illustrated embodiment is a molded, transparent member having indicia lines for identifying the serviceability or repairability of damaged airfoils.

3,832,786

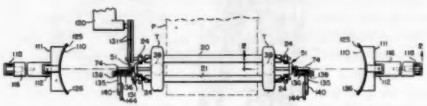
APPARATUS FOR TESTING FRONT WHEEL ALIGNMENT OF AUTOMOTIVE VEHICLES

Roger Macpherson, and Pierre A. Alsina, both of Rochester, N.Y., assignors to American Tatra, Inc., Rochester, N.Y.

Filed Aug. 11, 1972, Ser. No. 279,849

Int. Cl. G01b *5/25*

U.S. Cl. 33—288 **10 Claims**



Two, spaced, parallel rollers are mounted for limited vertical movement in a garage floor to engage and support the two front wheels of an automotive vehicle. At least one of the rollers can be driven to impart rotation to the wheels. Two tubular members, each containing a light bulb, are mounted by clamps on the outside of the wheels for rotation thereby, to project beams of light onto concave charts that are positioned beyond opposite ends of the rollers. A spring-loaded center in each tubular member is fulcrumed in the recess in the outer end of the turning spindle on which each wheel is mounted, so that as each member rotates, it may be pivoted. Its beam of light will trace a curvelinear path on the associated chart, if the spindle and wheel are misaligned. The position of the light beam on each chart is indicative of the toe-in and camber of the associated wheel. A lever pivoted on the floor is engageable with each tubular member to shift it into alignment with the associated spindle, so that the beam of light forms a stationary spot on the associated chart.

3,832,787

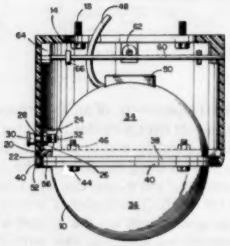
MAGNETIC COMPASS MOUNTING

John T. Fowler, Winthrop, Mass., assignor to Arthur D. Little, Inc., Cambridge, Mass.

Filed Aug. 20, 1973, Ser. No. 389,898

Int. Cl. G01c *17/38, 17/18*

U.S. Cl. 33—358 **8 Claims**



A magnetic compass mounting operative for installation of the compass on either bottom or top mounting surfaces and including compensating magnets to offset the effects of magnetic deviation and a rotational adjustment for calibrated positioning of the compass such as for magnetic variation correction.

3,832,788

PROCESS AND DEVICE FOR COOLING HOT-ROLLED WIRE RODS

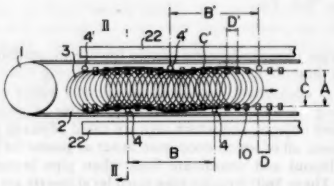
Tadashi Kato; Michitaka Fujita; Masashi Kamakura; Yutaka Mizuta; Hiroki Koyanagi, and Takuo Mizoguchi, all of Kitakyushu City, Japan, assignors to Sumitomo Metal Industries Limited, Osaka City, Japan

Filed Sept. 20, 1972, Ser. No. 290,489

Claims priority, application Japan, Oct. 13, 1971, 46-80775; Oct. 13, 1971, 46-81102; June 5, 1972, 47-56256; June 5, 1972, 47-56257

Int. Cl. F26b *7/00*

U.S. Cl. 34—13 **22 Claims**

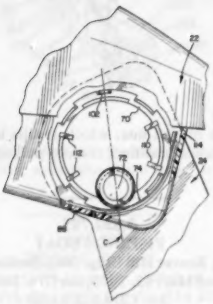


This invention relates to a process and device for cooling hot-rolled wire rods for producing wire rods having a uniform quality and excellent mechanical properties by greatly reducing the difference between the cooling rates in the central region and marginal regions of circular coiled wire rods which are conveyed continuously in a horizontal direction under such conditions that the centers of the wire rod coils are continuously shifted relatively at a fixed pitch.

3,832,789
NESTABLE HAIR DRYER WITH TENSIONED POSITIONING

Nial C. Bartram, Wilmington, Del., assignor to Schick Incorporated, Lancaster, Pa.

Filed Dec. 22, 1972, Ser. No. 317,539
Int. Cl. A45d *20/24*
U.S. Cl. 34—99 **20 Claims**



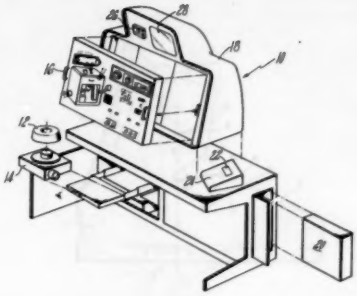
A nestable portable hair dryer which includes a base, a head supporting assembly, and a dryer head assembly, in which the base and dryer head assembly are pivotally mounted at opposite ends of the head supporting assembly in a "hinged Z" configuration. The dryer head assembly includes a generally annular air distribution plenum therein for receiving drying air and directing it radially inwardly, and a cover which is movably mounted with respect to the annular plenum. A squirrel cage blower is contained in an impeller housing disposed at the lower end of the head supporting assembly. It directs air upwardly through the head mounting assembly through a conduit in which air heating means are positioned, to an upper portion of the head mounting assembly which terminates in a horizontally disposed tube having means engagable with portions of the plenum to provide for passage of air through the head support and into the interior of the plenum while also permitting adjustment of the position of the head assembly with respect to the head mounting assembly. The dryer includes a head counter-balancing feature comprising a wound coil spring assembly in which the coil is wound around a post which is fixed with respect to the head support element. The coiled spring is arranged to permit the "free" end which is fixed to the other dryer element to be pulled to many positions, to provide constant tension to keep the dryer hood in any position selected by the user. This tensioning feature provides substantially constant tension to keep the dryer hood in any position selected by the user, and is particularly advantageous in permitting reliable noiseless adjustment of the head between an extreme elevated position and a normal elevated operating position.

3,832,790
PROGRAMMABLE TRAINER

George L. Fryer, Jr., and Herman B. Gibson, Jr., both of Orlando, Fla., assignors to EDP-ECC Corporation, Washington, D.C.

Filed Sept. 29, 1972, Ser. No. 293,434
Int. Cl. G09b *9/00*
U.S. Cl. 35—8 R **6 Claims**

A universal teaching machine which may be caused to function as a special purpose training system is disclosed. Simulation of a selected specialized lesson subject is accomplished by means of a set of randomly selectable pictures and a student display-reaction panel. The machine includes a stored program processor which operates under control of a prerecorded program model commensurate with the student panel; the program model being loaded into the memory of



the processor and cooperating with student operable actuators and display devices on the panel to program the machine to function as a special purpose training system.

3,832,791
GUNNERY TRAINING SCORING SYSTEM WITH LASER PULSES

Hans R. Robertsson, Molndal, Sweden, assignor to Saab-Scania Aktiebolag, Linkoping, Sweden

Filed Dec. 26, 1972, Ser. No. 318,008
Claims priority, application Sweden, Dec. 31, 1971, 16981/71
Int. Cl. F41c *27/00*
U.S. Cl. 35—25 **2 Claims**

In apparatus for gunnery practice by which firing towards a target comprising a reflector is simulated by laser emissions, a first radiation emission at firing is used for ranging, to ascertain a time interval following firing at which a round of a selected type of ammunition will arrive at the target. After that interval following firing, a second emission is used to obtain a fix on the target. The second emission comprises pulses encoding information about ammunition type and relation of point of impact of the simulated round to target location, to be decoded at the target and used for evaluating hit effect.

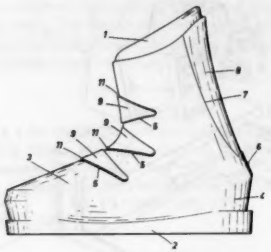
3,832,792
SKIING BOOT

Max Kastinger, Seewalchen AM Attersee, Austria

Filed May 14, 1973, Ser. No. 360,085
Claims priority, application Austria, Feb. 20, 1973, 1459/73
Int. Cl. A43b *00/00*
U.S. Cl. 36—2.5 AL **9 Claims**

The outer shell of the skiing boot has a top rim, a heel portion spaced below said top rim, means defining a step-in opening extending in said outer shell above said heel portion and having an open end at said top rim, closing means adapted to close said step-in opening, and an instep portion, which has a

center line and is formed with a plurality of motion-enabling apertures extending across said center line. A plurality of



coverings are removably held in and close said apertures and consist of an elastic material having a lower stiffness than the material of said outer shell adjacent to said apertures.

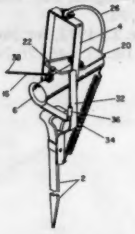
3,832,793
SHOE CONSTRUCTION
Abe Siskin, Padova, Italy, assignor to Geller Shoes, Inc., New York, N.Y.
Filed May 24, 1973, Ser. No. 363,396
Int. Cl. A43b *13/42*; **A43d** *9/00*
U.S. Cl. 36—2.5 R **8 Claims**

A non-welted shoe is comprised primarily of a preformed outer upper covering and a preformed outer sole covering with a middle sole and inner sole. The upper and sole coverings are joined together to form a shoe body by at least one row of decorative and interlocking stitching adjacent the sole line. The middle sole and inner sole are placed in the formed shoe body. While the shoe body is in a mulled or moistened condition it is lasted to size and the upper covering in the heel area is stitched together along a seam line.

3,832,794
FISHING POLE HOLDER
Petro Antonio Encinias, 1124 21st St., Denver, Colo. 80205
Filed Mar. 9, 1973, Ser. No. 339,657
Int. Cl. A01k *97/12*
U.S. Cl. 43—15 **4 Claims**

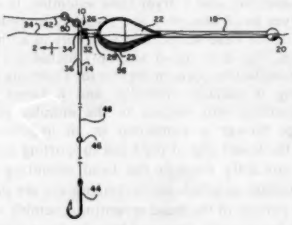
A device, intended primarily for use in fresh-water lake fishing, and incorporating features which will be contribute to the ease and convenience of those who fish for hobby and sporting reasons, is hereby enclosed.

The fishing pole holder, with the utilization of a mechanical action which is initiated by the movement of fish nibbling on the lure or bait on the line, allows the user to set the device with the pole in place, and to leave it unattended, the need to return occurring only when the release mechamism is trig-



gered by a fish on the line, which results in the pole being snapped to a vertical position, thereby pulling the fish and line from the water.

3,832,795
FISHING FLOAT
Henry S. Wolfe, Beaver Hill Bldg. (So.), Jenkintown, Pa. 19046
Filed Mar. 13, 1973, Ser. No. 340,658
Int. Cl. A01k *93/00*
U.S. Cl. 43—17 **5 Claims**

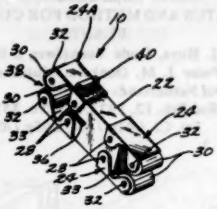


A fishing float of the pivoting type which is pivotally connected to a sliding rod. The sliding rod is movable relative to the fishing line from a casting position which is located near the fishing hook to a floating position which is spaced from the hook a distance sufficient to permit the bait to slip to the exact desired depth. The float is generally elongated in configuration and includes a weight or a weighted arm at one end, a pivotal connection at the other end and a float portion which is interposed between the ends, the said float portion being positioned closer to the pivotal connection for leverage purposes to render the float extremely sensitive to fish strikes.

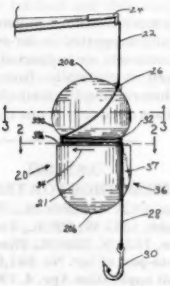
3,832,796
FISHING ROD HOLDER
Joseph R. Cardwell, 2727 Sheridan, Des Moines, Iowa 50310, and True J. Berry, 6103 Winona Ave., Des Moines, Iowa 51104
Filed Aug. 10, 1973, Ser. No. 387,526
Int. Cl. A01k *87/02*
U.S. Cl. 43—25 **9 Claims**

A fishing pole having telescopic rod sections is disassembled and the rod sections are held in parallel side-by-side relationship by a pair of holders each having oppositely extending resilient jaws engaging the opposite ends of the rod sections. A hook is provided on each of the holders for wrapping the fish line. Each holder includes a solid block of resilient rubber material and channel-shaped arms extend from each side on each end of the block. Rollers are provided on the free ends of the arms between the flanges of the channels. The arms or jaws are yieldably moved to an open position upon insertion or

removal of the rod section between them and the rod section is held tightly in place by the rollers pressing the rod section against the rubber block. The resiliency of the arms may be changed by providing a slot into the block along its centerline and the jaws will also accommodate a larger in diameter rod section.



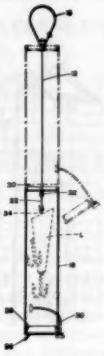
3,832,797
FISHING FLOAT
Richard W. Smedley, 1008 Alann Dr., Joliet, Ill. 60435
Filed Feb. 26, 1973, Ser. No. 335,474
Int. Cl. A01k *91/00*
U.S. Cl. 43—43.11 **2 Claims**



A float is provided for use while cast fishing, the float having a circumferential groove capable of storing the portion of the fishing line between the float and the hook and having at least one line engaging surface which is disposed at an angle to the circumferential groove and prohibits the line from unwinding from the groove during casting of the float, line and hook through the air.

3,832,798
LURE CONTAINER
Robert G. Pilston, 1265 S. Bellaire, Denver, Colo. 80220
Filed June 1, 1973, Ser. No. 366,001
Int. Cl. A01k *97/04*
U.S. Cl. 43—57.5 R **5 Claims**

A container having an elongated tubular transparent housing which envelops a lure suspended therein by a line connectable to a fisherman via a buttonhole, belt, auxiliary chain or necklace, etc. When access to the lure is desired, an access closure which closes the bottom of the housing is removed and the housing is moved upward along the line to expose the lure and line connector. After separation of the lure from the connector, the housing returns by gravity to its initial position, stopped by an abutment on the line connector engaging the container. A multiple lure container is also disclosed which provides a plurality of transparent plastic tubes open at one end and formed into an integral body. A hinged plastic transparent cover extends over and closes the upper open ends of the tubes. A shoulder strap supports the container on the user. By this arrangement visual access is provided to the interiors of the tubes.



3,832,799
AMUSEMENT DEVICE FOR A CRIB OR THE LIKE
Jorma Vennola, Princeton, N.J., assignor to Columbia Broadcasting System, Inc., New York, N.Y.
Filed Feb. 16, 1973, Ser. No. 333,358
Int. Cl. A63l *33/00*
U.S. Cl. 46—1 R **2 Claims**

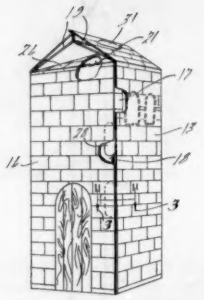
An amusement device adapted for fastening to an infant's crib. In accordance with the invention there is provided an elongated shaft having a free and a root end. A generally flat elongated fastening strap is also provided, the root end of the shaft being joined to a flat surface of the strap at about the middle of the strap. The shaft and strap are formed of a single piece of flexible material, such as flexible vinyl. The fastening strap includes a fastening means which permits attachment to a bar of an infant's crib in a manner whereby the shaft is extended horizontally in cantilever fashion. In the preferred embodiment of the invention the length of the shaft is selected, in conjunction with the hardness or durometer of the material, to yield a minimum stability of equilibrium. In this manner the shaft, of its own weight, will bend appreciably down and the force of room air currents or slight vibration of the crib frame will cause a swaying motion of the shaft.

3,832,800

DEVICE FOR CREATING PLAYTHINGS OUT OF MILK CARTONS OR THE LIKE

Abraham Selesny, Southfield, Mich., assignor to Strawberry Advertising Company, Southfield, Mich.

Filed Apr. 30, 1973, Ser. No. 355,312
Int. Cl. A63h *33/00*
U.S. Cl. 46—11 **7 Claims**



A paper sheet is scored or perforated to form a decorative cover for a milk carton or the like of the type having a peaked top with triangular inward folds. The cover is marked with four main panels and appropriately imprinted to resemble a castle or other play object. The top has two rectangular extensions for the peaked container top and two triangular extensions for the folds. The cover is placed around the carton and attached with tabs and slits along its edges. The triangular extensions are slipped under the top to lock the cover in place. Sheets may be made with various decorations and of different sizes so that groups of playthings may be assembled.

3,832,801

FERTILE INTERSPECIFIC HYBRIDIZATION CELL FUSION FOR HIGHER PLANTS

Peter S. Carlson, Islip; Harold H. Smith, Shoreham, and Rosemarie D. Dearing, Copiague, all of N.Y., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed May 8, 1973, Ser. No. 358,447
Int. Cl. A01g *31/00*
U.S. Cl. 47—58 **3 Claims**

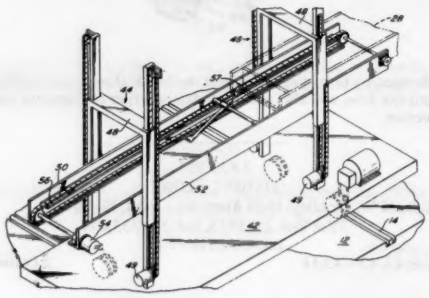
Interspecific plant hybrids are produced by parasexual procedures. Protoplasts of separate plant species are isolated, fused, and induced to regenerate into plants. The somatic hybrids are recovered from a mixed population of parental and fused protoplasts by a selective screening method that relies on differential growth of the hybrid on defined culture media. The biochemical and morphological characteristics of the somatically produced hybrid are identical to those of the sexually produced amphiploid.

3,832,802

APPARATUS AND METHOD FOR CULTIVATING PLANTS

Theodore H. J. Huys, Oude Vonkelweg 2 Broekhuizen, Limburg, and Peter J. M. Donkers, Mutshoek 36, Boekel, N-Brant, both of Netherlands

Filed Feb. 12, 1973, Ser. No. 331,915
Int. Cl. A01g *1/04*; B65g *1/06*
U.S. Cl. 47—1.1 **6 Claims**



Plants, such as mushrooms, are cultivated in elongated containers reciprocally supported in air-conditioned chambers. The elongated containers are supported by rollers so that they may be removed horizontally from their chamber for processing and then returned to their chamber. The air-conditioned chambers are open only at one end.

3,832,803

MEANS AND METHOD FOR TREATING TREES

Robert L. Blake, 1821 N. 28th St., Phoenix, Ariz. 85034; Charles N. Blake, 1212 W. 6th St., Tempe, Ariz. 65281, and James D. Blake, 1821 N. 28th St., Phoenix, Ariz. 85034

Continuation-in-part of Ser. No. 861,090, Sept. 25, 1969, abandoned. This application Apr. 4, 1972, Ser. No. 240,973
Int. Cl. A01g *29/00*
U.S. Cl. 47—57.5 **4 Claims**

A means and method for treating trees, wherein a manually portable motor driven drill is utilized to drill holes in trees in a downwardly declining direction, and wherein fluid is injected into said holes after they are drilled, and may be partially filled with treating fluid by injecting the fluid through a passage in the drill used to drill the hole.

3,832,804

DOOR ASSEMBLIES

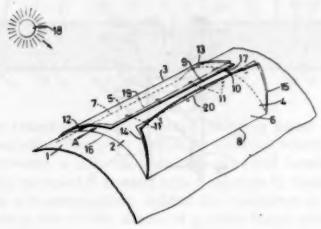
Hugh Arthur Goldsmith, Bristol, England, assignor to British Aircraft Corporation, Limited, London, England

Filed July 31, 1973, Ser. No. 384,288

Claims priority, application Great Britain, Aug. 3, 1972, 36197/72

Int. Cl. G08b 13/08

U.S. Cl. 49—13 6 Claims



A door assembly, in which the door is liable to become distorted when open, is provided with a plurality of latching units each with an actuation means to effect latching and a sensing device which senses when its associated latching unit is in a position to be latched and then causes its actuation means to effect latching, the assembly being arranged such that when, due to any distortion present, perhaps just one latching unit becomes latched as the door is closed such latching is effective to cause a further sensing device to cause latching of its associated latching unit and so on in random sequence.

3,832,805

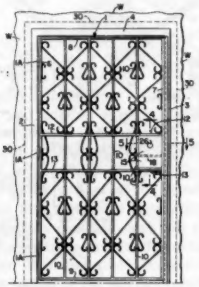
PREFABRICATED OUTSIDE STEEL DOORS

Weldon L. Stevens, 1420 Park Ave. N.E., Salem, Oreg. 97303

Filed Oct. 12, 1972, Ser. No. 296,860

Int. Cl. E06b 3/00

U.S. Cl. 49—503 1 Claim



A protective prefabricated outside metal door hingedly mounted within its own frame or casing as a unitary assembly. The assembly is adapted for operative mounting on the face of or within a permanently framed opening in the wall of the building. The frame of the opening may be of metal, wood, or other suitable material.

3,832,806

MULTIEDGE LAPPING

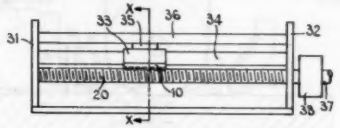
Peter Albert Walker, Stevenage, and Gordon George Scarrott, Welwyn-Garden City, both of England, assignors to International Computers Limited, London, England

Filed Dec. 11, 1972, Ser. No. 309,843

Claims priority, application Great Britain, Dec. 1, 1971, 55733/71

Int. Cl. B24b 7/02

U.S. Cl. 51—71 6 Claims



Apparatus is disclosed for simultaneously lapping spaced parallel faces on a workpiece by means of an elongate lapping tool which has a plurality of spaced lapping faces. The lapping faces may be formed as a helical surface on the lapping tool so that rotation of the lapping tool results in the faces on the workpiece being lapped by a number of separate portions of the helical surface and results in the workpiece being moved along the lapping tool so that each face is lapped successively by a number of different portions of the helix.

3,832,807

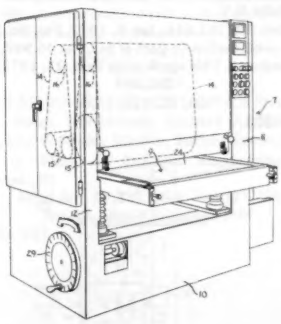
WIDE BELT SANDING MACHINE WITH IMPROVED WORK FEEDING MEANS

Fred W. Kiser, Hopkins, and Allan J. Stinn, South St. Louis Park, both of Minn., assignors to Timesavers, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 226,272, June 26, 1972, abandoned. This application Sept. 17, 1973, Ser. No. 397,837

Int. Cl. B24b 21/04

U.S. Cl. 51—138 6 Claims



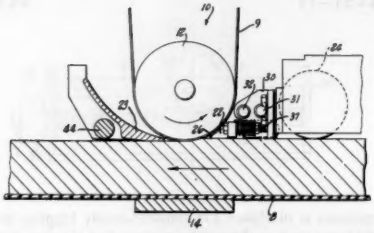
A wide belt sanding machine with a vertically oriented sanding head and an endless horizontally oriented conveyor belt having its top stretch sliding across a platen which is urged upwardly to press work or the conveyor belt into engagement with the sanding head, by "air springs" reacting between the platen and a conveyor frame in which the conveyor belt is mounted, with either high force for abrasive dimensioning of the work or with low force for finish sanding, the air springs being connectable with a pressure source through either of two pressure regulators, one set to hold the platen rigid up to the capacity of the machine but to yield if necessary to prevent an overload, and the other set to urge the platen towards the sanding head with a yielding force sufficient only for finish sanding.

3,832,808

ABRASIVE BELT-TYPE LUMBER PLANING MACHINE

Fred W. Kiser, Hopkins, Minn., assignor to Timesavers, Inc., Minneapolis, Minn.

Filed July 9, 1973, Ser. No. 377,826
Int. Cl. B24b 21/08
U.S. Cl. 51—138 9 Claims



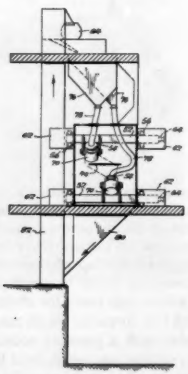
An abrasive belt-type lumber planing and dressing machine in which the workpiece is fed horizontally through the machine by the top stretch of an endless conveyor belt, to have its upwardly facing surface acted upon by a contact drum-supported endless abrasive belt traveling at high speed, and in which a downwardly biased infeed pressure shoe holds the workpiece down on the conveyor belt along a transversely extending area just ahead of the zone of contact between the workpiece and the abrasive belt, the pressure shoe being mounted in the machine by a parallelogram linkage which maintains the toe of the pressure shoe at substantially the same distance from the zone of contact between the workpiece and the abrasive belt despite changes in the elevation of the pressure shoe caused by variations in workpiece thickness.

3,832,809

METHOD FOR REMOVING WUSTITE SCALE

James H. Carpenter, Jr., and Don B. Nalley, both of Hagerstown, Md., assignors to The Carborundum Company, Niagara Falls, N.Y.

Division of Ser. No. 215,616, Jan. 5, 1972, Pat. No. 3,731,432, which is a continuation-in-part of Ser. No. 46,969, June 17, 1970, abandoned. This application Sept. 22, 1972, Ser. No. 291,497
Int. Cl. B24c 1/00
U.S. Cl. 51—320 22 Claims



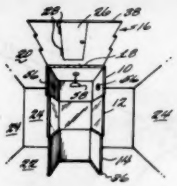
Wustite scale is removed from iron or steel products by blasting fine grit from a centrifugal blast wheel which rotates at low speed, against the product at an angle thereto with the grit having sharp edges.

3,832,810

ENVIRONMENTAL MODULE

William W. Johnston, 1016 E. Wineland, Augusta, Ga. 30904

Filed Aug. 15, 1972, Ser. No. 280,802
Int. Cl. E04b 1/99
U.S. Cl. 52—67 7 Claims



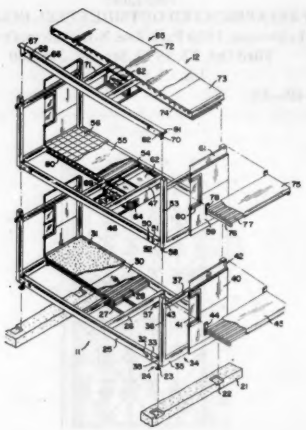
An enclosure adapted to isolate a portion of a room from the remainder of the room is constructed in the form of a series of hollow, vertically telescoping sections which in their extended position form enclosure side walls extending from floor to ceiling.

3,832,811

RELOCATABLE BUILDING MODULE

Ernest M. Briel, Jr., 235 Debra Ct., Satellite Beach, Fla. 32931

Filed June 7, 1971, Ser. No. 150,420
Int. Cl. E04b 7/16
U.S. Cl. 52—69 2 Claims



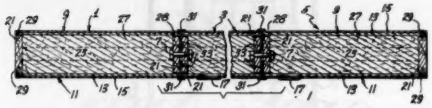
A relocatable building module apparatus and shipping crate for shipping a disassembled module. A folded module can be placed in position on location and walls erected in their upright position relative to the floor by rotating the walls on hinged points on the floor and locking them in place. A roof can then be attached to the walls and several modules can be aligned together in a positive alignment.

3,832,812

FIRE RETARDANT INSULATED MODULAR BUILDING PANELS

Henry G. Hiatt, Edgewater, Md., assignor to Annapolis Yacht Yard, Inc., Annapolis, Md.

Filed June 6, 1972, Ser. No. 260,195
Int. Cl. E04b 1/343, 1/41
U.S. Cl. 52—127 9 Claims



A fire retardant, weight-bearing building panel having a frame enclosing fiberglass insulating material which is press-fitted between a pair of aluminum-plywood bonded sheet faces. The plywood is treated with a solution to render it substantially non-combustible. Added fire resistance is obtained by including one or two sheets of gypsum board between the outer wood sheets.

3,832,813

SKIRTING FOR MOBILE HOMES

Milo F. Hindman, No. 15 Evergreen, Centralia, Ill. 62801

Filed Aug. 21, 1972, Ser. No. 282,478
Int. Cl. E04h 1/12
U.S. Cl. 52—169 8 Claims

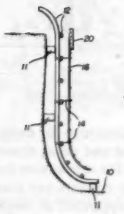
Vertically directed panels of the skirting for a mobile home are secured to, and depend from, an elongated supporting member which is fastened to the lower portion of that mobile home. That lower portion will be essentially horizontally directed, and it will be free of the irregularities that are frequently noted in the surface of the ground below a mobile home; and hence that elongated supporting member will be essentially horizontally directed, and will thereby enable the panels of that skirting to be essentially vertical as they depend downwardly from that elongated supporting member. The lower ends of the panels of the skirting extend into a relatively deep, elongated, retaining member which rests on the ground; and the lower ends of those panels are spaced far enough above the bottom of that relatively deep, elongated, retaining member to accommodate any and all anticipated movement of that relatively deep, elongated, retaining member relative to those lower ends of those panels as the ground shifts and "heaves" throughout the years. The elongated supporting member and the relatively deep, elongated retaining member each resiliently grips the panels of the skirting, and thereby keep those panels from fluttering and vibrating when the wind blows. Moreover, protected ventilating openings are provided in limited areas of each of the panels of the skirting to permit desirably limited "breathing" of the area below the mobile home.

3,832,814

SWIMMING POOL AND METHOD OF MAKING THE SAME

Allen R. Teschner, Grant Ave., Jensen Beach, Fla. 33492

Filed Mar. 29, 1973, Ser. No. 346,018
Int. Cl. E04b 1/16; E02d 27/00; E04h 7/18
U.S. Cl. 52—169 9 Claims



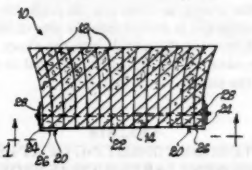
The method of making a swimming pool includes steps of excavating a cavity in the ground, lining the cavity with reinforcing rod, retaining mesh in a position inwardly spaced from the reinforcing rod, pouring concrete in the space between the surface of the cavity and the mesh to encapsulate the reinforcing rod, with the mesh serving as an inner form for retaining the concrete and forming impressions in the concrete to provide a rough surface to be plastered, and plastering the rough surface to form an exposed inner pool surface of plaster. Thus, the swimming pool includes the reinforcing rod, the mesh, the retainer means, the poured concrete pool wall encapsulating the reinforcing rod and having impressions formed therein by the mesh, and plaster adhering to the concrete surface at the mesh and the impressions formed in that surface for forming the exposed inner surface of the pool.

3,832,815

MODULAR INSULATION OF FIBROUS MATERIAL

Joseph K. Balaz, Northbrook; Richard A. Kelly, Prospect Heights, and Wolfgang Schulze, Buffalo Grove, all of Ill., assignors to Flinn & Dreffein Engineering Company, Northbrook, Ill.

Filed Jan. 29, 1973, Ser. No. 327,705
Int. Cl. E04c 3/10; E04b 1/80
U.S. Cl. 52—227 18 Claims



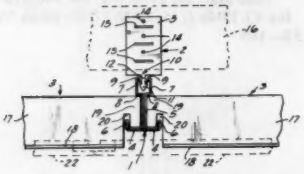
Ceramic fiber insulation for lining furnaces in which the insulation fibers are formed into prefabricated modules by compression members located at the outer, cold side end portion of the insulation layer and by which the modules are mounted in position of use on the furnace wall.

3,832,816

CONCEALED GRID SUSPENDED CEILING STRUCTURE WITH SIMPLIFIED INSTALLATION

Martin D. Jahn, Riverside, Ill., assignor to Chicago Metallic Corporation, Chicago, Ill.

Filed June 5, 1972, Ser. No. 259,501
Int. Cl. E04b *5/52*
U.S. Cl. 52—496 **18 Claims**



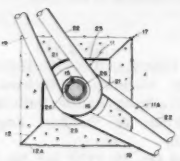
A suspended ceiling structure for supporting ceiling panels, utilizing a system of main and cross runners in which the main runners are constructed for suspension from supporting means therefore, and the cross runners are each constructed to extend between and be supported at respective ends from the main runners, the cross runners being movable along the main runners and having panel supporting elements arranged to position the plane of ceiling panels supported thereby completely below said main runners whereby disposition of a ceiling tile is independent of the locations of main runners.

3,832,817

METHOD OF PANEL CONNECTION AND CONNECTORS THEREFOR

Ernst Martens, Winnipeg, Manitoba, Canada, assignor to Spiroll Corporation Ltd., Manitoba, Canada

Filed May 26, 1972, Ser. No. 257,101
Claims priority, application Canada, July 6, 1971, 117412
Int. Cl. E04b *1/38;* **E04c** *5/16*
U.S. Cl. 52—583 **2 Claims**



Eye loops are formed in the edges of panels to be joined and overlap one another when the panels are placed in position. An expandable sleeve is inserted through the overlapping loops and a wedge pin is driven into the sleeve thus expanding the sleeve and drawing the panels into the exact position relative to one another. The joint is then grouted to seal the junction between the panels.

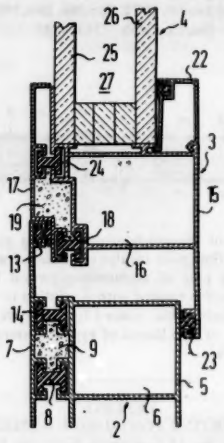
3,832,818

COMPOSITE BODY CONSISTING OF AT LEAST TWO COMPONENT PARTS SUCH AS PROFILES

Helmar Nahr, 54 Nurnberger Strasse, 8530 Neustadt-Aisch, Germany

Filed June 1, 1971, Ser. No. 148,437
Int. Cl. E04g *21/00;* **E04c** *2/26*
U.S. Cl. 52—731 **5 Claims**

A window or door frame assembly having formed elements, extrusions, profiles or the like held together by joining insulating pieces interfitting and connecting the formed elements, the whole assembly containing a foamed filling compound serving functions of insulating, stiffening, holding, expanding and tensioning of the connecting means simultaneously.

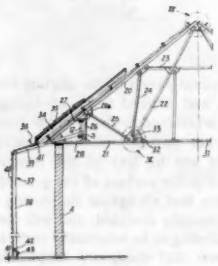


3,832,819

METHOD OF CONSTRUCTING BUILDING AND APPARATUS FOR CARRYING OUT SAID METHOD

Henri Rene Houdin, 18 Rue Theodore de Banville, Paris, France

Filed Nov. 9, 1972, Ser. No. 305,065
Claims priority, application France, Nov. 26, 1971, 71.42471
Int. Cl. E04b *1/00;* **E04g** *21/00*
U.S. Cl. 52—741 **4 Claims**



Building is constructed by assembling roof on temporary beams which project beyond the building. Roof is either constructed on beams in final position or raised on beams after construction. The space beneath the roof is then shielded from the weather by tarpaulins or the like and the remainder of the building erected in this space. The invention includes apparatus for use in thus constructing the building.

3,832,820
PANEL MOUNTING

Frank Eggert, Hamburg, Germany, assignor to The Schlegel Manufacturing Company, Rochester, N.Y.

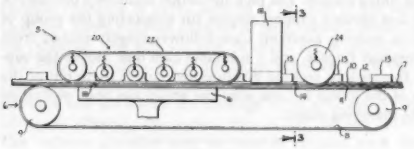
Filed Dec. 7, 1971, Ser. No. 205,497
Claims priority, application Germany, Dec. 30, 1970, 2064443
Int. Cl. F16b 7/22
U.S. Cl. 52—753 T 7 Claims

A panel mounting means uses a channel having an edge formed as a hook, and a complementary hook along the edge of the panel interlocks with the channel hook. A strip of resilient material is wedged in the channel to hold the hooks in interlocking relation.

3,832,821
USE OF CORRUGATED PAPERBOARD FOR SKIN PACKAGING SUBSTRATES

Richard L. Walus, Minneapolis, Minn., assignor to Possis Corporation, Minneapolis, Minn.

Filed July 23, 1973, Ser. No. 382,075
Int. Cl. B65b 33/02
U.S. Cl. 53—22 A 6 Claims



Corrugated paperboard substrate is moved through a skin packaging machine with its corrugations oriented transversely to direction of advance. Lengthwise extending marginal edge portions of the substrate are maintained compressed, at least all along that portion of the substrate that is over the suction nozzle, thereby preventing air from leaking into the corrugations.

3,832,822
MULTI-LEVEL, IN-LINE SYSTEM FOR PACKAGING ARTICLES

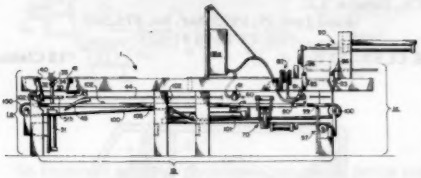
Earle C. Sherman, Monroe, La., assignor to Olinkraft, Inc., West Monroe, La.

Filed Jan. 30, 1973, Ser. No. 327,045
Int. Cl. B65b 11/26
U.S. Cl. 53—32 13 Claims

Multi-level, in-line method and apparatus for packaging articles such as doors which automatically folds and seals a five-panel, corrugated packing folder about the doors as the doors and the folder move in a generally "U"-shaped path through the machine, most of the folding being accomplished by static guides.

In the method and apparatus of the present invention the package is formed around the doors by dropping them with an appropriately positioned packing folder downward into the receiving well of the machine and then horizontally advancing the package through the various positions from the initial first and second positions to the sixth position where a traveling glue applicator applies glue to the last flap of the package, with the package then traveling upward to the seventh (compression) position to set the glue, and then finally out of the machine generally in-line with the door construction line.

The package thus begins by moving down in a vertical direction in the first section of the machine, then forward along a horizontal plane in the middle or second section of the machine, and then up in the third section, following generally a "U"-shaped path through the machine. This vertical-horizontal-vertical line of travel, combined with the operative



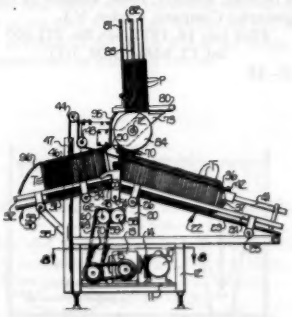
steps of folding (the bulk of which is formed by static guides), gluing and setting along the way, result in a much improved and more compact system than heretofore achieved. The beginning and ending of the package at approximately the same general vertical level also greatly enhances the practical, production in-line use of the system of the present invention.

In the intermediate, horizontal section and the final vertical section there are included intermittent, reciprocating drive systems which allow a traveling glue pot applicator to laterally traverse the width of the machine to apply glue to the final, sealing flap and the final flap to be held under static compression after the article has been completely packaged.

3,832,823
TRAY AND PAD INTERLEAVING APPARATUS

Grover C. Currie, Lenoir, N.C., assignor to Cellu Products Company, Patterson, N.C.

Filed July 30, 1973, Ser. No. 384,114
Int. Cl. B65b 35/50; B65g 57/28, 59/00
U.S. Cl. 53—35 15 Claims



In accordance with this invention, single absorbent pads are interleaved between adjacent food packaging trays of the type used in packing and displaying chickens and the like. The trays are in nested condition and are moved along an upwardly inclined first guide chute and in a substantially vertical position to an interleaving station. The trays leaving the interleaving station are in nested condition and are moved along a downwardly inclined second guide chute to provide a substantially V-shaped opening at the interleaving station and

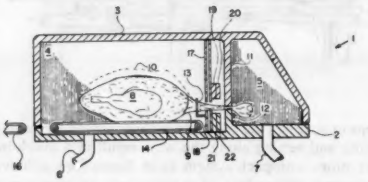
between the leading tray of the approaching group and the trailing tray of the leaving group of trays so that the upper ends of these trays are separated and moved out of their nesting relationship. An absorbent pad is fed in a substantially vertical position and into the V-shaped opening prior to the movement of each tray through the interleaving station so that an absorbent pad is interleaved between the successive trays leaving the interleaving station.

3,832,824

APPARATUS AND METHOD FOR EVACUATING PACKAGES

William E. Burrell, Duncan, S.C., assignor to W. R. Grace & Co., Duncan, S.C.

Filed June 29, 1973, Ser. No. 375,300
Int. Cl. B65b *31/02*
U.S. Cl. 53—22 B **18 Claims**



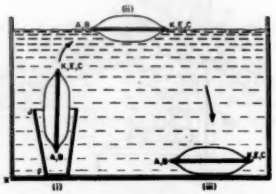
A filled flexible receptacle such as a thermoplastic bag containing a food product is evacuated by placing the filled portion of the bag in a first vacuum chamber; extending the neck of the bag into a second and adjacent chamber; evacuating the first chamber thereby causing the bag to balloon outwardly away from the product; and, while the first chamber is being evacuated, evacuating the second chamber and, consequently, evacuating the interior of the ballooned bag; thereafter, when evacuation of the bag is complete, elevating the pressure in the first chamber to collapse the bag firmly around the product and immediately closing the bag thereby making an evacuated package.

3,832,825

WAX AND ASPHALT (BITUMEN) PACKS

Antoinette Dunbar, Bombay, India, assignor to Esso Research and Engineering Company, Linden, N.J.

Filed July 14, 1972, Ser. No. 271,807
Int. Cl. B65b *63/08, 3/17*
U.S. Cl. 53—25 **5 Claims**



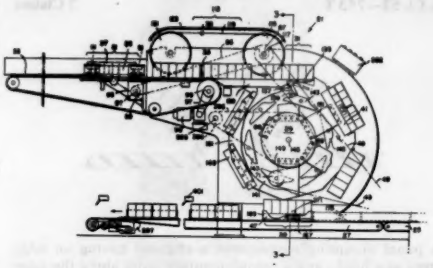
Asphalt or wax is packed in fabric bags which may be lined with paper which in turn is coated to prevent sticking to the wax or asphalt. The filling of the bags can be carried out while the bag is supported in a container floating atop a water bath, following which the container and filled bag sink into the water to float the bag from the container. The water bath also hastens cooling of the hot asphalt or wax.

3,832,826

BOX FORMING AND FILLING METHOD AND MACHINE

John E. Ullman, Huntingdon Valley, Pa., assignor to Huntingdon Industries Incorporation, Bethayres, Pa.

Filed May 21, 1970, Ser. No. 39,287
Int. Cl. B65b *5/08, 21/14*
U.S. Cl. 53—35 **17 Claims**



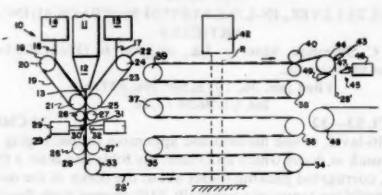
A machine for forming and filling boxes with a group of articles such as cans, comprising a loading section including a conveyor for delivering cams to a grouper, a grouper for grouping the cans into groups, a conveyor for delivering the grouped cans to the pick-up station positioned adjacent to a rotatable drum, spring-mounted clamping plates on the drum for grasping the group of cans and carrying it to a filling station, a cam mechanism for moving the clamping plates toward each other to grasp the group of cans and for moving the clamping plates away from each other to release the group of cans at the filling station to fill box, and a forming section for taking flat blanks of corrugated paperboard and erecting and sealing them to form boxes and for delivering a series of boxes to the filling station. The pick-up station includes a plurality of rails and pivoted support fingers for supporting the group of cans in pick-up position. Cam-follower fingers extend from the support fingers, and a rotatable cam disk moves the support fingers into pick-up position and moves them out of the path of the group of cans after the group has been picked up by the clamping plates.

3,832,827

CONTAINER FORMING AND FILLING APPARATUS

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Continuation-in-part of Ser. No. 696,966, Dec. 18, 1967, Pat. No. 3,676,249, which is a continuation-in-part of Ser. No. 269,832, March 22, 1963, abandoned, which is a continuation of Ser. No. 651,749, April 9, 1957, abandoned. This application July 10, 1972, Ser. No. 269,926
Int. Cl. B65b *55/08, 9/10, 9/04*
U.S. Cl. 53—111 R **9 Claims**



An apparatus and method are provided for continuously forming containers of plastic sheet material and filling same as they are formed, thereby eliminating the need to rehandle formed containers to effect their filling. In one form, two sheets of weldable polymeric material or metal are continu-

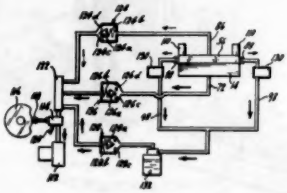
ously fed together from respective roll supply thereof, are edge seamed and welded together to form continuous pockets between each of which is fed an intermittent supply of material to form the contents of the pockets. In another form, the sheets are continuously formed by one or more extruders and fed together where they are formed into pockets with each pocket being closed after a predetermined quantity of contents are delivered between the two sheets. If extruded continuously, the sheets are preferably fed downwardly together while fluent material is intermittently disposed therebetween after each previous pocket is sealed and disposed below the newly formed but open pocket.

3,832,828

EVACUATION AND VENTING SYSTEM FOR VACUUM PACKAGES AND VACUUM CHAMBER THEREFOR

Louis F. Martin, Woodridge, N.J., assignor to Standard Packaging Corporation, New York, N.Y.

Filed Jan. 29, 1973, Ser. No. 327,685
Int. Cl. B65b *31/02*
U.S. Cl. 53—112 A **13 Claims**



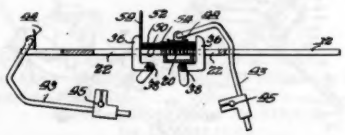
An evacuation and venting system and method for providing vacuum packages utilizing a vacuum chamber having two vacuum channels or ports, located at the side of the vacuum chamber, and a vacuum channel or port, located at the top of the chamber. The side vacuum channels are arranged to provide efficient evacuation of a package disposed in the vacuum chamber to allow the space between the bottom of the package and the top of the package to be evacuated without adversely affecting the sealing bars of the vacuum chamber. The vacuum chamber may be used to vacuum pack liquid-packed foodstuffs by having the top vacuum channel vent or otherwise remove the liquid from the side vacuum channels subsequent to evacuation.

3,832,829

HOSIERY BANDER

Roger D. Stout, High Point, N.C., assignor to Paramount Southern Co., High Point, N.C.

Filed Nov. 13, 1972, Ser. No. 306,327
Int. Cl. B65b *13/02, 49/08*
U.S. Cl. 53—198 R **1 Claim**



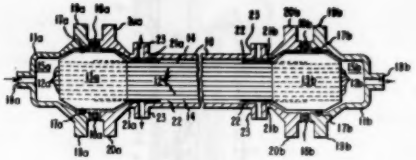
Apparatus for wrapping hosiery with a band having pressure sensitive adhesive on one side. A pair of heads are rotated to depress end flaps of the band that are raised by a pair of breaking fingers.

3,832,830

PERMEATION SEPARATION DEVICE

James A. Gerow, Newark, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Sept. 18, 1972, Ser. No. 290,139
Int. Cl. B01d *53/22*
U.S. Cl. 55—158 **6 Claims**



An improved selective permeation separation device comprising

1. a bundle of at least one million, preferably, at least five million, longitudinal hollow filament membranes which at least at one end are imbedded in and extend through a cast resin tube sheet characterized as having a wicked portion extending along the hollow filament membranes in the bundle,
2. a shell surrounding the bundle and providing an annular space for fluid around the bundle and sealed thereto in a fluid-tight relationship at each end having a cast resin tube sheet,
3. means for introducing a fluid mixture into the device so as to produce a permeate portion passing through the walls of the hollow filament membranes and a non-permeate portion which does not pass through the walls of the hollow filament membranes,
4. means for removing the non-permeate portion of the fluid mixture from the device,
5. means for removing the permeate portion of the fluid mixture from the device, and

as the improvement,

6. at each end of the bundle having a cast resin tube sheet an elastic restraining element, under elastic tension, surrounding the bundle of fibers, extending from within the cast resin tube sheet along the bundle beyond the wicked portion of the tube sheet, and restraining and immobilizing the portions of the fibers which are within the confines thereof into an inflexible bundle.

3,832,831

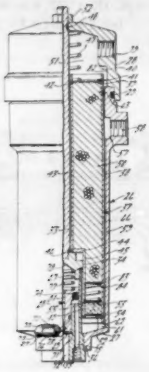
COOLER-FILTER UNIT FOR COMPRESSED AIR SYSTEMS

Rex E. Ritchie, and John B. Welker, both of Van Wert, Ohio, assignors to Aeroquip Corporation, Jackson, Mich.

Filed Aug. 10, 1972, Ser. No. 279,488
Int. Cl. B01d *50/00*
U.S. Cl. 55—218 **7 Claims**

A cooler-filter unit connected between a governor-controlled compressor and an air tank. The unit directs compressor air along the inside surface of a metal housing for cooling, moisture being trapped in a sump. The air reverses flow to separate particles and passes through an annular filter and desiccant bed to the outlet. A water dump valve responsive to governor signals is located within the housing so that the warm circulating air will prevent its freezing. The filter and desiccant are carried by a separate housing and should the filter

become clogged, air pressure will shift this housing to bypass the air directly to the outlet. In the event of governor failure to



stop the compressor, high pressure will open the water dump valve which will act as a pop-off valve.

3,832,832

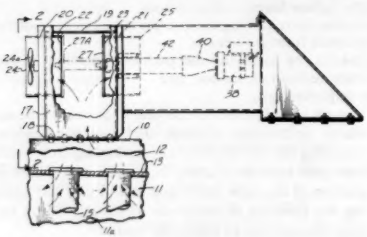
METHOD AND APPARATUS FOR CLEANING THE FILTER ELEMENTS OF A DUST COLLECTOR

Harry E. Hoon, Jr., Strongsville, Ohio, assignor to Envirotech Corporation, Salt Lake City, Utah

Filed June 12, 1972, Ser. No. 262,042

Int. Cl. B01d *46/04*

U.S. Cl. 55—302 **1 Claim**



A method and apparatus for cleaning a fabric tubular type filter element in a dust collector by imparting a momentary pneumatic pulse to the filter element at predetermined intervals. The pulse is imparted to the filter by reversing the direction of the air flow through it and immediately thereafter restoring normal flow of air through the filter element, all within a period of a fraction of a second. The apparatus includes a high speed electric motor having an extension on its shaft which is directly coupled to a valve member through a screw and nut coupling. The valve member is movable in a direction extending axially of the motor axis and is disposed between two aligned but spaced apart valve seats, one of which is in communication with a source of less-than-air pressure and the other of which is in communication with the atmosphere. As the valve moves from one seat to the other, communication between the filter element and the source of less-than-air pressure is shut off and simultaneously the filter element is in communication with the atmosphere. The motor is reversed as soon as the valve shuts off the source of less-than-air pressure and the valve seat is immediately returned to its original position, where it shuts off communication between the filter element and the atmosphere. The motor is actuated at cyclic intervals by any one of various forms of timing or pressure responsive devices.

3,832,833

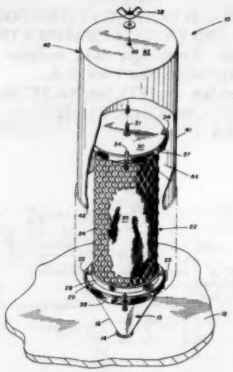
DUST COLLECTOR

Edgar Russell Cox, Smithfield, Tex., assignor to Texas Industries, Inc., Dallas, Tex.

Filed Dec. 26, 1972, Ser. No. 318,554

Int. Cl. B01d *46/04*

U.S. Cl. 55—378 **4 Claims**



A dust collector for venting bins for storage of pulverulent materials such as cement silos is disclosed. The dust collector has an inlet adapted to be secured to the bin which carries a foraminous bag support. The bag support internally houses a filter bag. The bag is removably secured at its top and bottom to the support. A weather shield covers the filter structure to substantially prevent rain and moisture from entering the silo through the filter. The support prevents the filter bag from bursting by restraining the bag against overexpansion. The support structure also cooperates to clean the bag as the bag flexes against the support due to pressurization and contacts the support to shake loose clogging material.

3,832,834

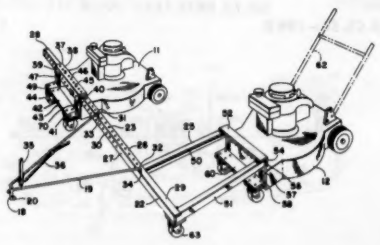
LAWN MOWER HITCH

George E. Kovacs, 8562 Olde Eight Rd., Northfield, Ohio 44067

Filed Dec. 18, 1972, Ser. No. 315,794

Int. Cl. A01d *75/30*

U.S. Cl. 56—6 **7 Claims**



An adjustable lawn mower hitch for connecting two rotary type lawn mowers to a tractor or riding mower. The lawn mowers are provided with caster wheels and a connecting

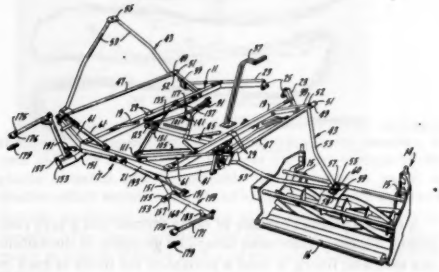
flange for coupling to the lawn mower hitch while permitting independent use of the lawn mowers. The lawn mower hitch is adjustable to provide for coupling to lawn mowers having different cutting diameters and is usable for towing only a single lawn mower.

3,832,835

SEVEN GANG HYDRAULIC REEL MOWER

George E. Hall, Des Plaines, and Jack Carr, Glenview, both of Ill., assignors to Roseman Mower Corporation, Glenview, Ill.

Filed Jan. 8, 1973, Ser. No. 321,828
Int. Cl. A01d *75/30*
U.S. Cl. 56—7 **17 Claims**



A packaged hydraulically operated gang mower assembly for mounting on an industrial type tractor. The assembly includes a U-shaped frame which connects to the tractor. The mowers are of the reel type and are driven by hydraulic motors. Hydraulically operated arms for raising, lowering the pulling the mowers are mounted on the frame. The side and rear mower arms are each individually raised and lowered. The underneath mower arms are raised and lowered by a single cylinder and piston. The mowers are supported by the ground during cutting operations and are connected to their arms so as to be free to follow the ground undulations both along and across the path of travel. Stability of the mowers during cutting is independent of their connections to their arms and is accomplished by the combination of front caster wheels and a rear roller on each mower. The hydraulic drive motors for the reels are arranged in at least two circuits with the motors in each circuit connected in series. Hydraulic fluid reservoirs for the drive motors are arranged to provide maximum cooling of the hydraulic fluid.

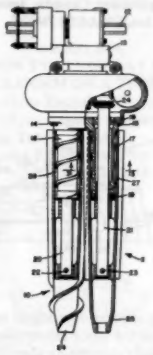
3,832,836

HARVESTER ROLL STRUCTURE

Sidney Elmer Anderson, Geneseo, Ill., assignor to Deere & Company, Moline, Ill.

Filed Nov. 28, 1973, Ser. No. 419,612
Int. Cl. A01f *11/06*
U.S. Cl. 56—104 **5 Claims**

A harvester roll structure composed of a gear housing and a rigid elongated shaft sleeve fixed to the gear housing which supports a roll drive shaft. The drive shaft has one end projecting from the sleeve. A hollow harvesting roll is fixed to the exposed end of the shaft and projects therefrom over and in surrounding relationship to the sleeve. Fixed to the sleeve and projecting into the spacing between the sleeve and the hollow



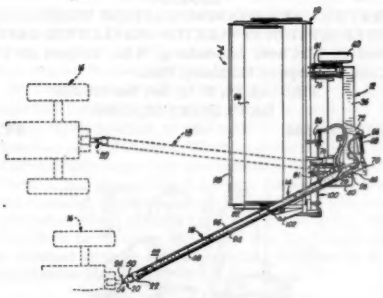
roll is a spiral rib which cooperates with the roll as it rotates to expel material from the spacing between the sleeve and roll.

3,832,837

WINDROWER HAVING REAR MOUNTED OVERTOP SWINGABLE TONGUE

Merle K. Burkhart; Ferol S. Fell, and Cecil L. Case, Newton, Kans., assignors to Hesston Corporation, Hesston, Kans.

Continuation of Ser. No. 191,521, Oct. 21, 1971, abandoned. This application Sept. 7, 1973, Ser. No. 395,347
Int. Cl. A01d *73/00*
U.S. Cl. 56—218 **9 Claims**



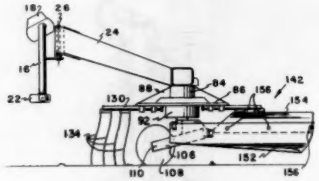
A swingable over-the-top tongue is provided for a windrower having a main frame positioned rearwardly of its crop cutting header. The forwardly extending tongue is upwardly arched for clearing the header above which it is disposed and is provided with a hitch at its forward end for attachment to a towing vehicle such as a tractor. The tongue is pivotally coupled to the frame for lateral swinging movement from a field-operating position to a roading position in which the tractor and the windrower are in essentially a straight-line relationship to one another presenting a minimal overall width. The tongue is further constructed in a manner to provide a fluid reservoir for hydraulically powered portions of the windrower.

3,832,838

COOPERATING WINDROWING STRUCTURE FOR A ROTARY TYPE RAKING DEVICE

John K. Hale, New Holland, Pa., assignor to Sperry Rand Corporation, New Holland, Pa.

Filed May 1, 1972, Ser. No. 249,321
Claims priority, application Canada, June 2, 1971, 114621
Int. Cl. A01d 79/00
U.S. Cl. 56—377 7 Claims



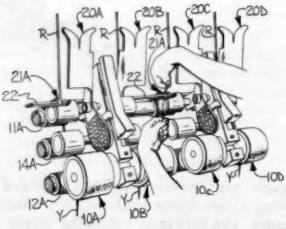
A rotor type raking device comprised of a pair of laterally spaced rotatively mounted rotor assemblies having a plurality of tines circumferentially depending therefrom and adapted to engage crop material and sweep it inwardly to deposit such in a windrow generally between the rotor assemblies. To augment the windrow forming capability, a windrow forming structure is provided for cooperation with rotating tines and principally functions to strip the crop material from the tines as they begin to lift and deposit the crop material in the windrow. Also the cooperating windrow forming structure functions to generally contain and confine the crop material within a specified windrow width, the present disclosure discloses two species of structure for cooperating with the tines in the windrow formation. The first species comprises a pair of laterally spaced, generally rearwardly extending rods mounted inwardly on the rotor assemblies. The second species is likewise mounted but comprises a pair of laterally spaced generally rearwardly extending baffle structures.

3,832,839

TEXTILE YARN SPINNING MACHINE WITH ROVING INTERRUPTION APPARATUS AND SLOTTED GUIDES

Robert E. McClure, Laurinburg, N.C., assignor to Parks-Cramer Company, Fitchburg, Mass.

Filed Oct. 24, 1973, Ser. No. 409,039
Int. Cl. D01h 5/00, 13/06
U.S. Cl. 57—106 4 Claims



Manual reinstitution of production of an attenuated strand, by a drafting system of a textile yarn spinning machine which cooperates with a device for interrupting feeding of roving strands, is facilitated by the provision of slotted guides or trumpets constructed for receiving a roving strand by lateral movement of an intermediate portion of a running length of the strand relative to the guide.

3,832,840

FIBROUS PRODUCT AND APPARATUS FOR AND METHOD OF PRODUCING

Roland E. Langlois, and Cletis L. Roberson, both of Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Aug. 10, 1972, Ser. No. 279,575
Int. Cl. D02g 3/34
U.S. Cl. 57—140 J 11 Claims

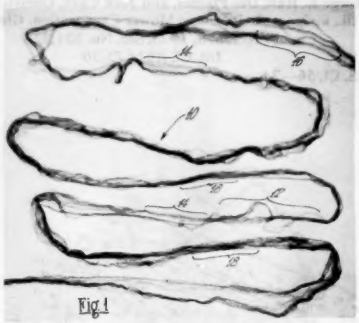


Fig. 1

A fibrous product capable of being formed into a yarn comprising a loosely associated sliver-like grouping of discontinuous synthetic fibers; at least a portion of the fibers at each increment of length of the product form a continuous coherent system of fibers establishing dimensional stability to the product; and other fibers of the grouping intermittently form a secondary coherent system bending outwardly between spaced locations along the length of the product to impart a non-uniform character to the product, and apparatus for and method of producing the product by laterally condensing the fibers of a web.

3,832,841

ORNAMENTAL EXPANSIBLE STRIP

Bernard M. Cole, Old Westbury, L.I., N.Y., assignor to Stribbons Ltd., Roslyn Heights, N.Y.

Filed Apr. 12, 1973, Ser. No. 350,404
Int. Cl. D02g 3/32, 3/38, 3/12
U.S. Cl. 57—152 8 Claims

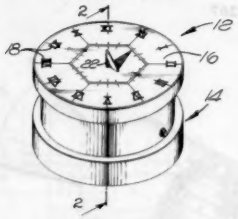
An ornamental expansible strip for use as a yarn stretch gift packages tie and as a decorator hair tie, and the method of making the same. The expansible strip comprises an elastic core under a retained low stretch and an ornamental yarn cover embracing the same, the yarn cover comprising yarn strands which are stretched and coiled about in the same direction and on opposite side of the elastic core, the core and yarn cover combinedly possessing a stable twist, the yarn being tightly wound, and locked to the stretched and twisted elastic core.

3,832,842

ARTIFICIAL SUNDIAL

David L. Parker, 10335 Rubio Ave., Granada Hills, Calif. 91344

Filed July 5, 1973, Ser. No. 376,844
Int. Cl. G04b 19/30
U.S. Cl. 58—50 R 8 Claims



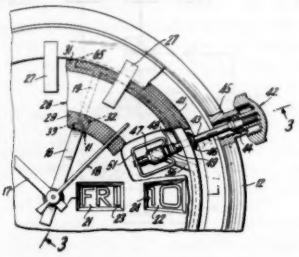
An artificial sundial formed of a rotatable motor having a shaft which extends through a planar translucent member. A time indicator is positioned adjacent the inner surface of the planar member and is rotatable with the motor shaft. A shadow effect member is secured to the motor shaft and has a portion positioned adjacent the outer surface of the planar member. The time indicator and the shadow effect member rotate in unison with the shaft and produce a visual indication of time.

3,832,843

ELECTRIC ALARM TIMEPIECE

Paul Wuthrich, Watertown, Conn., assignor to Timex Corporation, Waterbury, Conn.

Filed Feb. 20, 1974, Ser. No. 444,074
Int. Cl. G04b 23/12; G04c 21/34, 21/16
U.S. Cl. 58—57.5 8 Claims



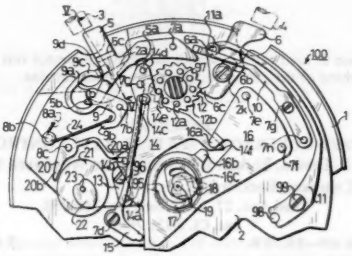
An electric alarm timepiece includes an on-off switch wherein the alarm ringing circuit is closed when the bottom surface of the hour hand contacts an alarm set spring extending beneath the tip of the hour hand. The outer portion or tip of the hour hand is guided by a formed ridge on the alarm time set ring and moves about the inner surface of the ring thereby assuring proper contact closure with the spring. The alarm set spring is mounted at one end to the alarm set ring and is rotatable therewith for purposes of setting. The alarm time set ring includes a downwardly extending outer portion comprising a ring gear which is engageable by the stem pinion to set the alarm.

3,832,844

PUSH BUTTON TYPE DISPLAY CORRECTION MECHANISM ON A TIMEPIECE

Tetso Matsumura; Akira Tsuzuki; Kazuo Tanaka, and Choken Suzuki, all of Tokyo, Japan, assignors to Citizen Watch Company Limited, Tokyo, Japan

Filed June 2, 1972, Ser. No. 259,018
Int. Cl. G04f 7/04
U.S. Cl. 58—74 6 Claims



Push button-operated motion-control or display correction mechanisms in timepieces, especially chronograph- and stop watches in which at least one motion-transmitting member is arranged between a plate and a sensible member which is preferably a chronograph hand arbor, for cooperation with said button and said sensible member. A spring urges said motion-transmitting member towards its cooperating position with said button. The motion-transmitting member has two operating positions for different cooperation with said button. When a regular manual pressure force is applied to said button, the force as such will be transmitted from said button through said transmitting member when it is positioned at its first cooperating position, to said sensible member for effective position control thereof. When a substantial force is applied substantially larger than said manual pressure force upon said button, said transmitting member is positioned now at its second cooperating position under the combined influence of its substantial inertia and the resiliency of the spring will be blocked from its receding movement and the button movement checked through said transmitting member by a stationary member, preferably a watch casing.

3,832,845

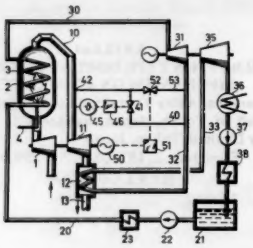
COMBINED GAS AND STEAM POWERPLANT WITH SUPPLEMENTARY STEAM MIXING

Emile Aguet, Winterthur, Switzerland, assignor to Sulzer Brothers Ltd., Winterthur, Switzerland

Filed Aug. 28, 1973, Ser. No. 392,183
Claims priority, application Switzerland, Sept. 7, 1972, 13133/72
Int. Cl. F01k 23/06; F02c 7/02
U.S. Cl. 60—39.18 B 9 Claims

In addition to tapping off a flow of steam from the steam turbine for mixing into the combustion gas flow to the gas turbine in order to regulate the temperature of the combustion gas flow, the plant can be regulated to insure continued operation of the air compressor and generator at low loads. To this

end, a supplementary means is provided to tap off steam for mixing into the gas flow when the load decreases. The



decrease in load can be measured off the generator run by the gas turbine or the generator run by the steam turbine.

3,832,846

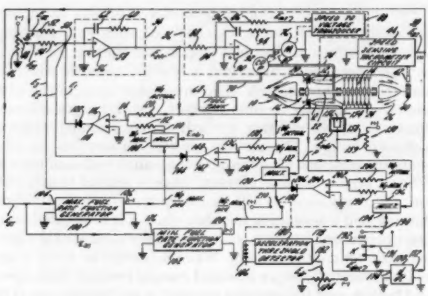
SPEED GOVERNOR WITH FUEL RATE CONTROL

James L. Leeson, Rockford, Ill., assignor to Woodward Governor Company, Rockford, Ill.

Filed Apr. 27, 1972, Ser. No. 248,058

Int. Cl. F02c *9/06*

U.S. Cl. 60—39.28 R **7 Claims**



A fuel flow scheduling system for a prime mover in which the maximum and minimum allowable rates of fuel flow are computed as functions of various operating variables of the prime mover and compared to a control signal emanating from an integrating amplifier of a speed governor, the latter signal being a measure of the flow rate called for in maintaining the prime mover at a desired set point speed. If the flow rate desired by the governor exceeds the computed limits, the input of the integrating amplifier is modified so as to prevent further integral build up of its output signal and to facilitate smooth transition from operation at the computed limits of commanded fuel rate to operation at a normal fuel rate. Various alternative minimum and maximum fuel rate functions are computed from parameters measured by sensors associated with the prime mover. Limiting in the manner described is made possible by the incorporation of a precision voltage-to-flow rate transducer in the form of a constant displacement pump driven by a variable-speed voltage-controlled servomotor.

3,832,847

REGENERATIVELY COOLED ROCKET COMBUSTION CHAMBER WITH SLOTS BETWEEN COOLING CHANNELS

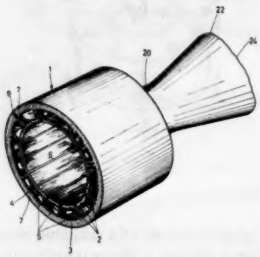
Karl Butter; Otto Tuscher, both of Munich, and Manfred Christl, Taufkirchen, all of Germany, assignors to Messerschmitt-Bolkow-Blohm GmbH, Munich, Germany

Filed June 16, 1972, Ser. No. 263,693

Claims priority, application Germany, July 24, 1971, 2137109

Int. Cl. F02k *11/02*

U.S. Cl. 60—267 **4 Claims**



A regeneratively cooled rocket combustion chamber includes a combustion chamber having a thrust nozzle with a thrust gas discharge and which includes an outer wall and and inner wall having cooling channels defined therebetween extending longitudinally which are spaced apart in a circumferential direction by radially extending slots therebetween which open into the combustion chamber and which extend at their opposite ends to the outer wall.

3,832,848

METHOD TO REDUCE NOXIOUS COMPONENTS IN THE EXHAUST OF INTERNAL COMBUSTION ENGINES

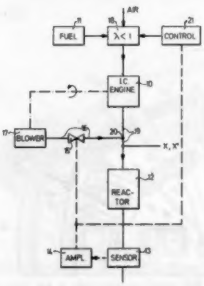
Friedrich Scholl, Stuttgart, Germany, assignor to Robert Bosch GmbH, Schillerhohe, Germany

Filed July 12, 1972, Ser. No. 271,009

Claims priority, application Germany, Mar. 30, 1972, 2215533

Int. Cl. F02b *75/10*; **F01n** *3/14*

U.S. Cl. 60—274 **12 Claims**



The ratio of fuel to air of the air-fuel mixture being applied to internal combustion engines is adjusted such that it is below the stoichiometric value; the composition of the exhaust gases from the internal combustion engine is then sensed before they are discharged in the atmosphere, and additional air is introduced to the exhaust gases before their liberation so that a predetermined optimal relationship with respect to the stoichiometric value is obtained.

3,832,849

SERVO STEERING DEVICE, ESPECIALLY FOR AUTOMOBILES

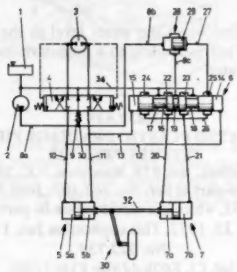
Armin Lang, Schwabisch Gmund-Bettringen, Germany, assignor to Zahnradfabrik Friedrichshafen AG, Friedrichshafen, Germany

Filed July 5, 1973, Ser. No. 376,372

Claims priority, application Germany, July 6, 1972, 2233167

Int. Cl. F15b 20/00; B62d 5/06

U.S. Cl. 60—386 3 Claims



A hydrostatic servo operated steering system having primary and shunt motors connected to the steering linkage under control of steering wheel and pressure operated valves to effect a change in steering effort in order to meet changes in load or resistance. A shuttle valve responsive to a pressure differential between the output of the engine driven servo pump and the pressure applied to the primary servo motor, controls supply of operating pressure medium to the shunt motor from either the servo motor or the steering wheel actuated control pump in the event the servo pump fails.

3,832,850

WORKING ELEMENT WITH A PISTON

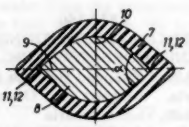
Poul Christian Dyhr-Mikkelsen, Kirke-Horup, Denmark, assignor to Danfoss A/S, Nordborg, Sweden

Filed Feb. 2, 1973, Ser. No. 329,103

Claims priority, application Germany, Mar. 4, 1972, 2210551

Int. Cl. F03g 7/06

U.S. Cl. 60—530 7 Claims



The invention relates to a thermostat assembly of the type having an open ended casing which defines a chamber and has a piston and a deformable bag in the chamber, the piston being sheathed in the bag. The chamber is filled with a thermostatic liquid which exerts pressure to collapse the bag and force the piston out of the chamber when the liquid is heated. The bag and piston have biconvex shaped cross sections instead of circular cross sections as in the prior art.

3,832,851

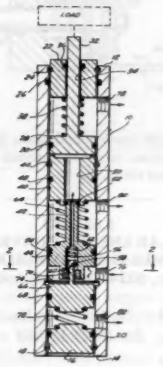
HYDRAULIC ACTUATOR

Henry E. Kiernan, Huntington Station, N.Y., assignor to Hydro-Stack Mfg. Corp., Huntington Station, N.Y.

Filed Nov. 3, 1972, Ser. No. 303,308

Int. Cl. F15b 3/00

U.S. Cl. 60—563 11 Claims



An hydraulic actuator capable of intensifying and multiplying force applications in relation to the available hydraulic pressure includes a cylinder having a closure sealing off its rear end and a piston bearing at its forward end. A piston in the forward part of the cylinder is provided with a forwardly projecting rod extending through the opening in the bearing. This rod is adapted to apply the intensified force to the selected load. An intensifying unit within the cylinder rearwardly of the forward piston includes a stationary piston barrel within the cylinder adapted to receive the hollow tube extension of a central piston. A valve forming part of the central piston is adapted to open to permit the available hydraulic pressure to pass through the passages of the central piston and its tube for application to the forward piston. When the valve is closed, the central piston is adapted to move forwardly thereby moving the piston tube within its barrel to intensify the hydraulic pressure acting against the forward piston and proportionately increase the force applied to the load. A valve opening means in the form of a forwardly projecting pin on a spring biased piston located rearwardly of the central piston facilitates opening of the valve to permit retraction of the central piston and consequently the reduction of the applied intensified force and eventual retraction of the forward piston rod.

3,832,852

CONSTRUCTION AFFORDING AUTOMATIC SYNCHRONIZING OF MASTER AND SLAVE FLUID POWER CYLINDERS

Loftin Waldean Schmucker, Hutchinson, Kans., assignor to The Cessna Aircraft Company, Wichita, Kans.

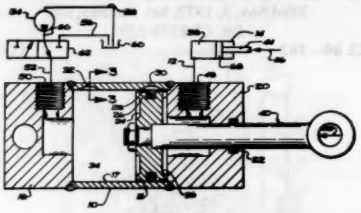
Filed Oct. 20, 1972, Ser. No. 299,322

Int. Cl. F15b 7/00, 15/20

U.S. Cl. 60—546 3 Claims

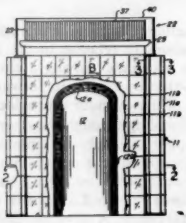
An improved master cylinder in which the interior of the cylinder wall has a short longitudinal groove which causes the master and slave pistons to complete their strokes and do so at substantially the same time. The groove, located near end of

cylinder, permits restricted flow past the master cylinder piston when this piston is nearing and at the end of its stroke



thereby causing both master and slave pistons to complete their respective strokes. A similar groove at the other end of the cylinder performs similarly.

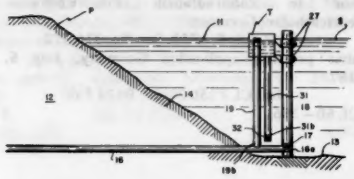
3,832,853
WIND AND SOLAR ENERGY CONVERSION SYSTEM FOR MULTI-STORY BUILDINGS
Tony W. Butler, Jr., 3224 Timmons, Apt. No. 136, Houston, Tex. 77027
Filed Mar. 26, 1973, Ser. No. 345,093
Int. Cl. F03q 7/02
U.S. Cl. 60—641 **21 Claims**



Kinetic wind energy is converted to potential energy for use in a multi-story building by employing the wind energy to rotate wind wheel assemblies mounted on the building. The wheel assemblies are in turn employed to compress air which is stored in a chamber contained within the associated building. The compressed air is employed to drive an electric generator which provides supplemental electricity for the building. A solar energy conversion system is included with the building whereby radiant solar energy is employed to heat air in vertical columns contained between spaced walls of glass which form the sides of the building. The rising air is employed to rotate a squirrel cage type assembly on the building roof which in turn is employed to power an air compressor for supplying pressurized air to the compression chamber. When storage is not required, the kinetic energy acting on the system may also be converted to mechanical energy which is employed to directly power electrical generators and/or air conditioning compressors.

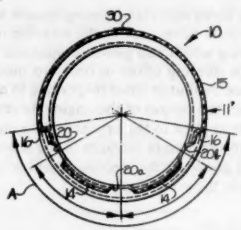
3,832,854
BOTTOM FLOW POND LEVEL CONTROL SYSTEM
James E. Metts, 931 Bonnie Ln., Aiken, S.C. 29801
Filed July 24, 1973, Ser. No. 382,149
Int. Cl. E02b 3/00
U.S. Cl. 61—1 **10 Claims**

The system disclosed controls the level of an open body of water and includes a tank suitably supported in the body of water adjacent to the water surface, the tank being provided with an inlet and an outlet, a conduit connected to the tank inlet for conducting water from the bottom of the body of water into the interior of the tank, and a conduit connected to the tank outlet for discharging water from the tank interior to



a remote location when the water level in the tank interior reaches a level corresponding to a predetermined level in the open body of water.

3,832,855
CORRUGATED PLASTIC DRAINAGE PIPE WITH INTERRUPTED RIB
Ernest J. Maroschak, Box 878, Roseboro, N.C. 28382
Continuation-in-part of Ser. No. 262,103, June 12, 1972, Pat. No. 3,747,352, which is a continuation-in-part of Ser. No. 228,508, Feb. 23, 1972. This application Jan. 11, 1973, Ser. No. 322,739
Int. Cl. E02b 13/00; F16l 11/06
U.S. Cl. 61—10 **8 Claims**

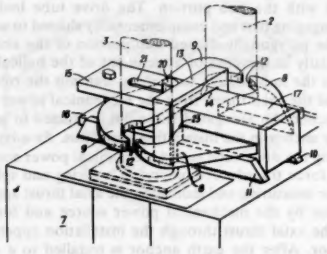


A resilient plastic drainage pipe having annular corrugations of alternating ribs and valleys, the majority of the ribs being uninterrupted and arranged in spaced groups with certain other ribs being interrupted by a recessed wall portion of an arcuate extent greater than 90 degrees and no more than 180 degrees. The recessed wall portion is positioned at a level intermediate the peripheries of the ribs and valley portions and has holes provided therethrough for drainage of liquids from the pipe.

3,832,856
DEVICE FOR VERTICALLY POSITIONING THE PROPS OF A MINE ROOF SUPPORTING FRAME
Siegfried Sigott, Alfred Zitz, and Heinrich Sussenbeck, all of Zeltweg, Austria, assignors to Oesterreichisch-Alpine Montangesellschaft, Vienna, Austria
Filed Dec. 14, 1972, Ser. No. 315,238
Claims priority, application Austria, Dec. 14, 1971, 10739/71
Int. Cl. E21d 15/44
U.S. Cl. 61—45 D **10 Claims**

A device for vertically positioning the props of a mine roof supporting frame in which a cap is supported by a plurality of props against a floor frame, comprising two claws being disposed so as to be movable towards each other; a stationary abutment, the two claws being arranged both sides of the abutments; a post being disposed stationarily on the floor frame, the abutment being located on the post; a hydraulic cylinder-

and-piston arrangement being adapted for locating a prop between the two claws, the piston of the hydraulic cylinder-and-piston arrangement being disposed between the two claws; and pressure-relief valve means for maintaining constant the positioning force and thereby limiting the positioning



force so that when excessive forces occur due to ground movements the pressure relief valve means opens before the props are damaged, the valve means being disposed in the working chamber of the hydraulic cylinder-and-piston arrangement.

3,832,857

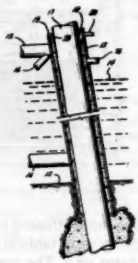
PRESSURE GROUTING

Max Bassett, Houston, Tex., assignor to C. Nelson Shields, Jr., Trustee, Houston, Tex.

Continuation-in-part of Ser. No. 358,009, May 7, 1973, abandoned. This application Aug. 14, 1973, Ser. No. 388,085

Int. Cl. E02d *5/74, 5/42*; **E02b** *17/00*

U.S. Cl. 61—46 **10 Claims**



A method for grouting the annulus between the jacket and piling in the legs of an offshore structure in which air is introduced to expel water from the lower end of the annulus, and the annulus is then filled from the top with grouting material. Water may be pumped down the annulus to wash out mud. Some grout may be pushed out the bottom of the annulus to remove mud or to form a bell foundation.

3,832,858

PILE DRIVING

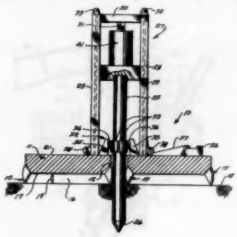
Edward O. Anders, Houston, Tex., assignor to Global Marine Inc., Los Angeles, Calif.

Filed Jan. 15, 1973, Ser. No. 323,826

Int. Cl. E02d *7/00, 7/02, 7/18*

U.S. Cl. 61—53.5 **29 Claims**

A pile driver includes a base and selectively operable means, such as an air cushion support system, for supporting the base in an elevated position above ground. Suitable cranes are provided for disposing a pile substantially vertically of the base with the lower end of the pile in engagement with ground adjacent the base. The base carries means which are operable in the elevated position of the base for transferring at least a substantial portion of the weight of the base to the pile. A suitable hammer is carried by the base for applying impact loads to the upper end of the pile. Where an air cushion support system is used, the system may be overpowered to cause the base to oscillate vertically through a range less than the



stable hover height of the base, and at least some of the energy of such oscillation is applied to the pile to drive it into the ground. Also, where an air cushion support system is used, the space under the base may be partially evacuated after the weight of the base is transferred to the pile, thereby to increase the downward steady-state preload applied by the base to the pile.

3,832,859

METHOD AND APPARATUS FOR SPREAD-FOOT PILES

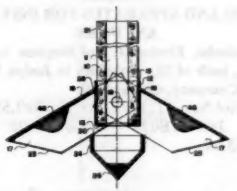
Rachot Kanjanavanit, 11/1 Sai 30, Sukumvit Ln., Bangkok, Thailand

Continuation-in-part of Ser. No. 818,325, April 22, 1969, abandoned. This application June 5, 1970, Ser. No. 43,917

Claims priority, application Great Britain, Apr. 24, 1968, 22390/68

Int. Cl. E02d *5/30, 5/44*

U.S. Cl. 61—53.58 **15 Claims**



A hollow core pile has a cap on the lower end enclosing the lower ends of hinged spread feet. When the pile has been driven to depth, a rod or plunger is extended down the hollow core of the pile and is impacted to drive the cap down clear of the lower ends of the feet. The pile is then driven further so that the inclined ends of the spread feet engage the edges of the cap which forces them outwardly into the spread position.

3,832,860

METHOD AND APPARATUS FOR INSTALLING ANCHORS

Earl Milton Jahnke, Elmhurst, Ill., assignor to Joslyn Manufacturing and Supply Company, Chicago, Ill.

Filed Nov. 17, 1972, Ser. No. 307,549

Int. Cl. E02d *5/80*; **G01n** *3/00*

U.S. Cl. 61—53.68 **15 Claims**

A method and apparatus for installing an anchor utilize the rotational power and axial thrust from a mechanical power source. The novel method and apparatus are particularly

adapted for installing an earth anchor of the type having at least one helical screw portion attached to a polygonally-shaped hub portion and having an elongated portion extending from the hub portion and include the placement of an elongated tube for telescopically receiving the elongated portion extending from the hub portion of the anchor in engagement with the hub portion. The drive tube includes a wrench engaging first end complementarily shaped to securely engage the polygonally-shaped hub portion of the anchor at least partially in the area of attachment of the helical screw portion to the hub portion to thereby transmit the rotational power from the mechanical power source to the anchor at an increased cross-sectional area of the anchor. The wrench engaging first end is further complementarily shaped to the pitch of the helical screw portion to engage a surface of the helical screw portion at a plurality of points to thereby distribute the axial thrust from the mechanical power source across a portion of the surface of the helical screw portion.

3,832,861

METHOD AND APPARATUS FOR INSTALLING ANCHORS

Earl Milton Jahnke, Elmhurst, and Stephen Anthony Petres, Forest Park, both of Ill., assignors to Joslyn Manufacturing and Supply Company, Chicago, Ill.

Filed Nov. 17, 1972, Ser. No. 307,550
Int. Cl. E02d 5/80; G01n 3/00
U.S. Cl. 61—53.68 **21 Claims**

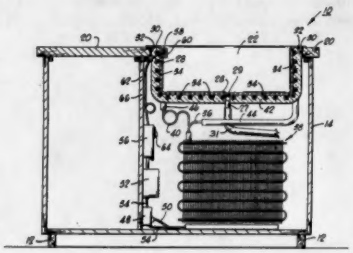
A method and an apparatus for installing an anchor utilize the rotational power and the axial thrust from a mechanical power source. The novel method and apparatus are particularly adapted for installing an earth anchor of the type having at least one helical screw portion attached to a polygonally-shaped hub portion and having an elongated portion extending from the hub portion and include the placement of an elongated drive tube for telescopically receiving the elongated portion extending from the hub portion of the anchor in engagement with the hub portion. The drive tube includes a wrench engaging first end complementarily shaped to securely engage the polygonally-shaped hub portion of the anchor at least partially in the area of attachment of the helical screw portion to the hub portion to thereby transmit the rotational power and the axial thrust from the mechanical power source to the anchor. An elongated shear pin is utilized to securely retain the anchor in the installation apparatus. An adapter for connecting the drive tube to the mechanical power source includes a force transducer comprising a spring and spline assembly for measuring and indicating the axial thrust applied to the anchor by the mechanical power source and for transmitting the axial thrust through the installation apparatus to the anchor. After the earth anchor is installed to a desired depth, the installation apparatus is removed from the anchor merely by a reverse axial thrust from the mechanical power source sufficient to shear the shear pin.

3,832,862

LABORATORY REFRIGERATION APPARATUS

George W. Ingels, 2310 Ravenwood, Norman, Okla. 73069

Filed Oct. 24, 1972, Ser. No. 299,911
Int. Cl. F25b 1/00
U.S. Cl. 62—227 **4 Claims**



Apparatus for enabling more efficient laboratory operations which includes a laboratory work table in combination with an open well type refrigerator unit. The apparatus consists of a laboratory work bench of the type finding utility in medical and biological laboratory operations which includes in coactive association therewith an open well type of refrigerator and the required refrigeration apparatus.

3,832,863

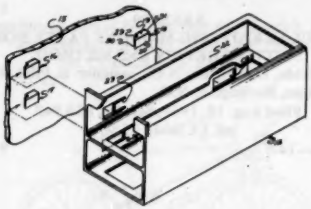
ICE TUNNEL MOUNTING

Earl D. Boorman, Jr., Louisville, Ky., assignor to General Electric Company

Filed Sept. 10, 1973, Ser. No. 395,851
Int. Cl. F25d 19/00
U.S. Cl. 62—298 **6 Claims**

An ice tunnel is mounted in a freezer compartment through having openings in a side wall thereof to receive L-shaped supports on a side wall of the freezer compartment by moving the ice tunnel toward the side wall of the freezer compartment to enable the supports to protrude through the openings into the ice tunnel and then moving the ice tunnel rearwardly. One opening has a movable tab therein to reduce the length of the opening to less than the length of the L-shaped support whereby the tab bends as the ice tunnel is moved toward the freezer compartment wall to receive the L-shaped supports

and then bends back to cooperate with the rear of the L-shaped support at the completion of rearward movement of the ice tunnel to lock the ice tunnel to the wall. The ice tunnel is removed from its mounting by inserting a sharp instrument



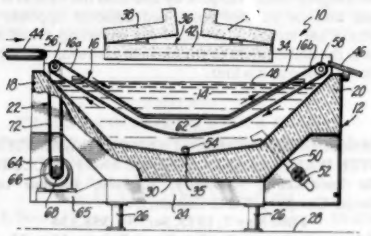
in the space between the tab and an edge of the opening to move the tab inwardly into the ice tunnel so that the ice tunnel can be moved forwardly to a position such that the L-shaped supports are aligned with the openings whereby the ice tunnel can be pulled away from the wall of the freezer compartment.

3,832,864

QUICK-FREEZING MACHINE

Ivan Rasovich, 1832 ½ N. Berendo St., Los Angeles, Calif. 90027

Filed Oct. 13, 1972, Ser. No. 297,418
Int. Cl. F25d *17/02*
U.S. Cl. 62—374 **5 Claims**



A quick-freezing machine including an insulated tank containing a liquid bath for quickly freezing items immersed therein. An endless slack conveyor belt is supported between opposite sides of the tank with all but endmost portions thereof fully immersed in the bath. The belt is driven from both of the end portions to maintain the slack in the belt and to fully immerse in the liquid items transported thereby through the bath.

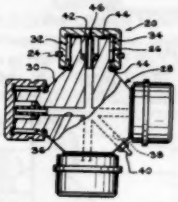
3,832,865

UNIVERSAL JOINT LUBRICATION

David S. Lewis, Defiance, Ohio, assignor to The Zeller Corporation, Defiance, Ohio

Filed May 4, 1973, Ser. No. 357,206
Int. Cl. F16d *3/26*
U.S. Cl. 64—17 A **14 Claims**

Improved lubrication of bearing cups in universal joints is provided. A cross of a universal joint has four trunnions extending therefrom along two mutually perpendicular lines. Bearing cups are rotatably received on the trunnions and the cups in turn are held by universal joint yokes. Lubrication passages extend from a central portion of the cross outwardly toward the ends of the trunnions. When the universal joint is stationary, lubricant such as grease may drain from an upper bearing cup down to a lower cup, leaving the upper cup devoid of lubrication when the universal joint is again placed in operation. In accordance with the invention, a cavity is in the



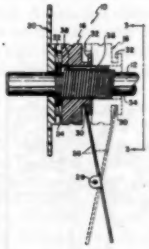
end of each trunnion communicating with the bearing cup and a passage extension extends substantially through the cavity from the lubrication passage toward the end of the trunnion. Lubricant is trapped in an annular space formed between the passage extension and the wall of the cavity with this lubricant being readily available to lubricate the corresponding cup when the universal joint is placed in operation.

3,832,866

FRICTION CLUTCH APPARATUS

Kenneth W. Thomson, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 14, 1972, Ser. No. 315,052
Int. Cl. F16d *3/14*
U.S. Cl. 64—27 C **4 Claims**



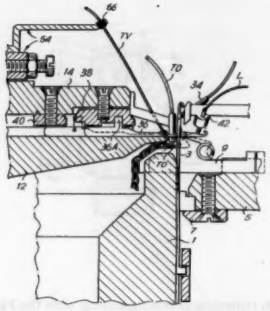
A friction clutch for providing a yieldable friction drive coupling between a drive member and a member to be driven, the drive and driven members being capable of relative axial movement. The clutch comprises a helical spring body wound in frictional engagement on one of the members, the helical spring having an end portion extending from the last coil along the spring body in the direction of the longitudinal axis thereof. The extending end portion forms a key which cooperates with a keyway integrally formed in the other member. The cooperation of the key and the keyway permits relative axial movement between the drive and driven members without interrupting the positive friction drive connection therebetween.

3,832,867

CIRCULAR KNITTING MACHINE AND ARTICLES KNITTED THEREBY

Vinicio Luchi, Via G. Filippo Mariti 102, Firenze, Italy

Filed May 10, 1972, Ser. No. 252,011
Claims priority, application Italy, May 14, 1971, 9514/71
Int. Cl. D04b 9/12
U.S. Cl. 66—9 R **8 Claims**



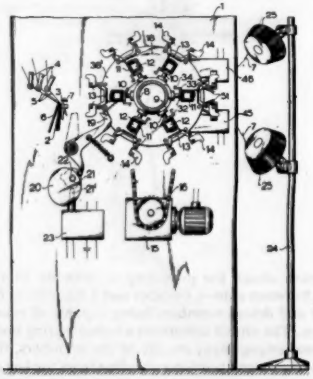
A knit fabric has longitudinally extending warp yarns bound into the stitches of the knit fabric. A circular knitting machine includes a needle cylinder and a dial which carries an array of pairs of hooked members each of which pairs serves to bind in one longitudinal warp yarn.

3,832,868

WARP KNITTING MACHINE

Josef Derich, Monchengladbach; Heinz Kamp, Rickelrath, and Gunter Frehn, Monchengladbach, all of Germany, assignors to W. Schlathorst & Co., Monchengladbach, Germany

Filed Nov. 13, 1972, Ser. No. 306,350
Claims priority, application Germany, Nov. 12, 1971, 2156386; Apr. 28, 1972, 2220942
Int. Cl. D04b 23/06
U.S. Cl. 66—84 **17 Claims**



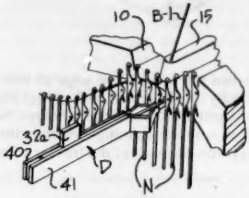
In a warp knitting machine, pneumatically operated means is provided for inserting weft thread in the material being knitted. The pneumatically operated means includes an elongated slotted tube in which a projectile is pneumatically propelled back and forth within the tube. The projectile has an arm passing through the slot in the tube and carrying operable means externally of the tube for pulling weft threads from a stationary supply reel. The weft threads are inserted in the material being knitted and suitable control means are provided for controlling the operation of the pneumatically operated means and the insertion of the weft threads.

3,832,869

CIRCULAR KNITTING MACHINE PANTY HOSE SLITTING DEVICE AND METHOD

Harper Shields, Burlington, N.C., assignor to Pilot Research Corporation, Burlington, N.C.

Filed Aug. 18, 1969, Ser. No. 850,943
Int. Cl. D04b 35/00
U.S. Cl. 66—147 **9 Claims**



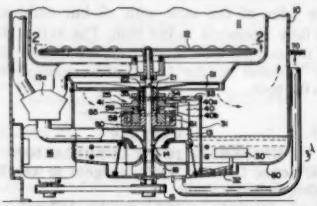
Seamless tubular fabric, such as panty hose blanks, are slit in a walewise direction as they are being knit on a circular hosiery knitting machine by means of the present method and apparatus. A relatively thin hooked yarn holding dial element is supported inside of the needle circle for rotation in timed relationship with the needles therein and the hooked outer end portion is thin enough to pass between immediately adjacent knitting needles to pick up and hold the yarn as it is fed to and knit on needles positioned adjacent opposite sides thereof. Cam means is provided for imparting radial movement to the dial element to cut the held yarn loop and separate or slit the fabric as it is knit.

3,832,870

COMBINATION WASHING AND DRYING MACHINE WITH WATER LEVEL CONTROL AND FAN CLUTCH

Leslie Todd-Reeve, Aylesbury, England, assignor to The Hoover Company, North Canton, Ohio

Filed May 7, 1973, Ser. No. 358,134
Claims priority, application Great Britain, May 23, 1972, 24227/72
Int. Cl. D06f 17/06; F26b 9/06, 25/22
U.S. Cl. 68—20 **7 Claims**



In the preferred form, a combination clothes washer-dryer including a cabinet in which clothes are hung for washing by being subjected to sprays of recirculated washing liquid and drying by being subjected to fan forced drying air. The drying fan is driven through a clutch mechanism on a drive shaft and

the clutch is selectively operated by a liquid level float to prevent operation of the fan until after the washing liquid has been removed from the cabinet.

3,832,871

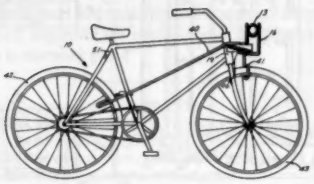
LOCKING BICYCLE SECURING DEVICE

Edward A. Kaufmann, 2785 N. Speer Blvd., Denver, Colo. 80211

Continuation-in-part of Ser. No. 349,489, April 9, 1973. This application Sept. 4, 1973, Ser. No. 393,828

Int. Cl. B62h 5/16; E05b 71/00

U.S. Cl. 70—227 5 Claims



A bicycle securing assembly including an elongated single support member elevated from the ground and having at least one attachment loop secured to said member. A lockable securing device is attached to a portion of the frame of the bicycle for engaging the attachment loop on said support. The securing device includes a bifurcated member for receiving the attachment loop and lock means securing the loop therein prevents the removal of the bicycle from the support. Elongated rods having a loop or hook formed at one end and a deformed section formed at the opposite end are arranged with the hook portion inserted around the rim and tire of the front and/or rear wheels, with the deformed portion extending into the space between the bifurcated arms to be secured by itself or with the attachment loop. Various locking devices are provided for enclosing the attachment loop and rods within the extended arms of the bifurcated member.

3,832,872

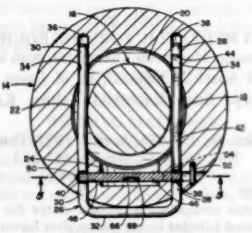
TRAILER COUPLING PIN LOCK COLLAR

John R. Gerlach, Monterey Park, Calif., assignor to Emhart Corporation, Bloomfield, Conn.

Filed Aug. 13, 1973, Ser. No. 388,107

Int. Cl. B60r 25/00; F16b 41/00

U.S. Cl. 70—232 10 Claims



A cylindrical collar is received upwardly telescoped over the downwardly projecting trailer coupling pin and a U-shaped keeper is slidably received through the collar movable between pin engaging and disengaging positions. In the keeper pin engaging position, leg portions thereof span opposite portions of the collar opening passing through opposite portions of the usual annular recess of the coupling pin thereby retaining the collar over the coupling pin preventing the coupling pin from engaging a trailer pulling tractor. A lock through a pivotal cam bar slides a locking bar transversely into engagement with the keeper when the keeper is in its pin engaging position thereby locking the keeper in such pin engaging position.

3,832,873

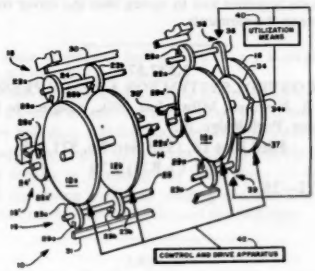
MULTIPLE CODE CODED MECHANISM

Jon H. Barnette, Albuquerque, N. Mex., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Aug. 6, 1973, Ser. No. 385,786

Int. Cl. E05b 37/02, 37/12

U.S. Cl. 70—291 11 Claims



A coded switch operable by any one of a plurality of codes which may include a set of independently rotatable drive wheels supported on a common axis which may be in simultaneous engagement with a plurality of code sets, each code set having independently rotatable code wheels engageable with each drive wheel. A code test wheel is also independently rotatably supported on the same common axis with the drive wheels and carries cam surfaces operably engaged with cam followers associated with the code sets for sensing whether the code wheels have a predetermined angular relationship representative of a code and for initiating same indication or response when this or other angular relationship is present. Means are provided to insert a code by sequentially rotating the drive wheels and code test wheel in a manner to vary and angular relationships of the code wheels and then to check the code input to see if it is a valid code then stored in the code wheels of a code set. An additional code set may be provided which is adapted to indicate the "sum" of the codes in the code wheel of all code sets engaged with a particular drive wheel.

3,832,874

KEY HOLDER

Richard A. Willis, 640 Fischer Dr., Phillipsburg, Kans. 67661

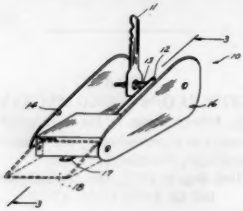
Filed Oct. 4, 1973, Ser. No. 403,651

Int. Cl. A47g 29/10

U.S. Cl. 70—456 R 4 Claims

A key holder in a readily accessible locked position yet operable to hold at least one key in a position for use. The holder including a male and female element detachably

secured together and having a key retaining rod mounted therebetween, a cover pivotably secured between the ele-



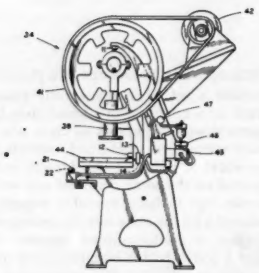
ments, and a locking member coactable with the elements to secure them together and to spring bias the cover to hold the keys between the elements.

3,832,875

CONTROL SYSTEM FOR A PUNCH PRESS

Thomas R. Newman, Milwaukee, Wis., assignor to Square D Company, Park Ridge, Ill.

Filed June 18, 1973, Ser. No. 371,029
Int. Cl. B21j 9/20
U.S. Cl. 72—25 **4 Claims**



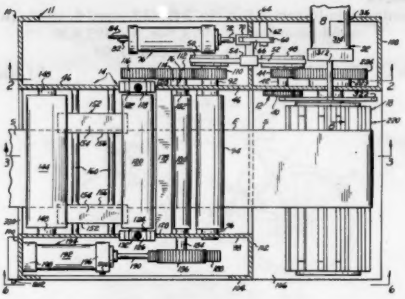
The control system is for a punch press having a reciprocatable bolster plate, and requires that run buttons of the system be depressed and held in place in order to energize first and second relays which control a bolster-in solenoid for a bolster-in actuating means. The energization of the bolster-in solenoid causes the bolster-in actuating means to move the bolster plate from a load position at the front of the press to a work position at the rear of the press. The bolster plate, as it nears the rear of the press, trips a first limit switch completing a holding circuit for the first relay and, upon arriving at the rear of the press, trips a second limit switch to deenergize the bolster-in solenoid. Both run buttons must be released simultaneously in order to energize a third relay and a ram solenoid thereby causing reciprocation of a ram. A third limit switch responsive to the cycling of the ram deenergizes the first, second and third relays at the conclusion of each cycle. Contacts of the first and third relays, operative upon deenergization, close and thus complete a circuit to the bolster-out solenoid thereby causing the bolster-out actuating means to move the bolster plate to the load position.

3,832,876

STRIP MATERIAL COILING MACHINE

Cornelis G. Arens, 700 Haggerty Hwy., West Bloomfield, Mich. 48033

Filed Dec. 20, 1972, Ser. No. 316,987
Int. Cl. B21b 37/00; B21f 11/00
U.S. Cl. 72—12 **7 Claims**



Intermittently rotated feed rolls feed a continuous strip of sheet material past an intermittently rotated cut-off and end-bending shaft cooperating with a stationary cut-off bar and a stationary wedge-shaped end-bending bar to sever, reversely bend the severed end, and feed the same to a coiling drum having thereon circumferentially spaced strip end catch bars, one of which grasps the bent end of the severed strip and couples it to the periphery of the rotating coiling drum as after a predetermined length of the strip has been measured off by a strip length measuring unit. During coiling, a crescent-shaped pivoted pressure arm prevents rumpling of the strip being wound thereon. While the severed strip is being completely wound on the coiling drum, a taping device descends and deposits a band of adhesive tape around the circumference of the coil on the drum so as to prevent it from unwinding. The intermittent motions of the rotary cutting and bending shaft, as well as that of the taping unit, are controlled and actuated by the pistons of fluid pressure cylinders which also regulate the starting and stopping of the strip feeding rolls. When the tape has been deposited, as far as is desired, around the periphery of the coiling drum, the tape roll is prevented from rotating by a braking device while the taping device is raised, thereby causing the thus-taut tape to be severed by a knife attached to the taping device. A coil ejector ring is then pushed against the inner end of the coil so as to eject it from the coiling drum.

3,832,877

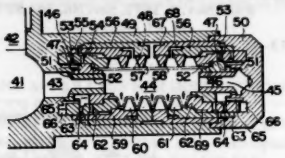
IMPACT HYDRAULIC FORMING EQUIPMENT

Hiroshi Tominaga; Masanobu Takamatsu, both of Yokohama, and Kouhei Adachi, Chigasaki, all of Japan, assignors to Tokyo Sharyo Seizo Kabushiki Kaisha, Kanagawa-ken, Japan

Division of Ser. No. 131,676, April 6, 1971. This application Nov. 19, 1973, Ser. No. 417,253
Int. Cl. B21d 26/04
U.S. Cl. 72—59 **4 Claims**

The apparatus comprises a tubular outer die in which are slidably mounted tubular inner piston dies having work forming inner surfaces corresponding to the desired contour to be imparted, by impact hydraulic pressure, to a tubular work piece inserted into the tubular inner piston dies. An impact hydraulic generator including apressure chamber and a hammer is connected to the apparatus to subject the interior of the tubular work piece and the tubular piston dies to impact hydraulic pressure, a cooperating pair of inner tubular piston dies being engaged with opposite ends of the work piece to shorten the axial length of the work piece as the latter is

laterally deformed to the desired shape. The piston dies are so formed that, as opposed dies move toward each other responsive to the impact hydraulic pressure, pressure bleeding ports are opened to control the application of the impact hydraulic pressure to the work piece.



3,832,878

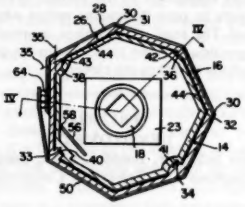
VEHICLE IDENTIFICATION APPARATUS AND INDENTING METHOD AND MANDREL

Herbert B. Sternberg, New York, N.Y., assignor to Automated Reference Corporation, New York, N.Y.

Division of Ser. No. 252,065, May 10, 1972, Pat. No. 3,768,185. This application Mar. 26, 1973, Ser. No. 344,690

Int. Cl. B44b *5/02*

U.S. Cl. 72—370 **4 Claims**



Recording apparatus for affixing registration and other data to the body of an automobile. There is a removable cover element for said data mounted on a bracket element. Special matched displaced sliding surfaces are provided at at least some of the intersections of the flat prismatic faces of the inside of the cover element and at the outside of the bracket element, which matching surfaces provide a snug fit and are more closely spaced than are the adjacent prismatic faces of the cover and bracket elements, thereby providing space for metal inwardly displaced during an indenting process performed on the outside of the cover element to record the data. In said indenting process the cover is mounted on a mandrel having a similar configuration to that of the bracket.

3,832,879

BENDING MACHINES

William John Holden, "The Spinney", Ladywood Rd., Martin Hussingtree, near Droitwich, England

Filed Mar. 12, 1973, Ser. No. 340,637

Claims priority, application Great Britain, Mar. 15, 1972, 12010/72

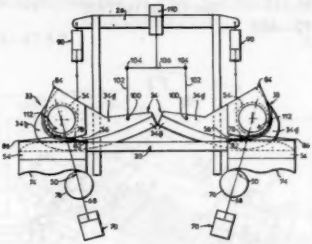
Int. Cl. B21d *5/02*

U.S. Cl. 72—383 **8 Claims**

This invention relates to machines for bending metal workpiece strips to form a road vehicle bumper bar having a central portion and two convex-curved end portions. The machine comprises a frame, a two-part die having a central portion and two convex-curved portions, said die being divided in the central portion to provide two similar die halves, and first mounting means for mounting the die halves on the frame for rotation about parallel axes. The machine additionally comprises first power operated means to rotate said half-dies about their axes of rotation.

The machine comprises two shoes, each of which is cooperative with a respective half-die in the vicinity of the convex-curved portion thereof, second mounting means for mounting said shoes on the frame for traversing movement relative to the half-dies, and second power operated means associated with each of the shoes and operative to urge the shoes towards their respective half-dies to trap a workpiece strip between the half-dies and the shoes.

Power operated traversing means are provided to cause the shoes to traverse around the convex-curved portions of their respective half-dies, and the machine comprises compensating means associated with each shoe and its associated power operated means to minimise the work done by the power operated traversing means in causing the shoes to traverse around the convex-curved portions of the half-dies.



3,832,880

RIVETING APPARATUS

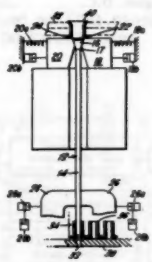
Bernard William Charman, Weybridge, England, assignor to Aerpat A.G., Zug, Switzerland

Filed May 26, 1972, Ser. No. 257,244

Claims priority, application Great Britain, May 28, 1971, 18177/71

Int. Cl. B21j *15/34*

U.S. Cl. 72—391 **5 Claims**



A pneumatically operated blind riveting apparatus includes an elongate mandrel having a stem and a head at the forward end thereof, and two pairs of alternately operable jaws associated with the mandrel, each of which serves to hold the mandrel when the other pair is open. One of the pairs of jaws constitutes an abutment for supporting a tubular blind rivet during a setting operation while the other pair of jaws is located rearwardly of the abutment jaws and is movable longitudinally of the mandrel whereupon, when in the closed position, such jaws may pull the mandrel head rearwardly through a rivet supported by the abutment jaws and may also return the mandrel forwardly. A jet delivers a blast of gas so as

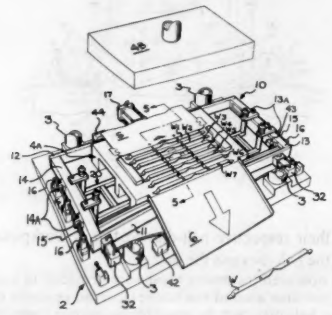
to propel rivets from the rear end of the mandrel towards the head past each of the pairs of jaws.

3,832,881

WORKPIECE TRANSLATION MECHANISM

William G. Henzler, and Robert E. Spino, both of Toledo, Ohio, assignors to Henzler Manufacturing Corp., Toledo, Ohio

Filed Feb. 12, 1973, Ser. No. 331,789
Int. Cl. B21j 11/00
U.S. Cl. 72—405 5 Claims



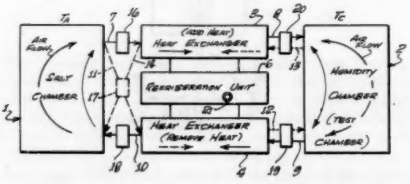
This invention relates to a workpiece translation mechanism for moving a workpiece through successive stations of a transfer stamping die. The workpiece is moved vertically out of the stationary half of the transfer die as the movable half of the die is shifted upwardly to its opened position, then the workpiece is moved horizontally to overlie the next station of the transfer die, and finally, the workpiece is moved vertically downwardly into the next station.

3,832,882

HUMIDITY TESTING APPARATUS

Oscar W. Schoen, Jr., Fort Lauderdale, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 10, 1973, Ser. No. 359,066
Int. Cl. G01w 1/18
U.S. Cl. 73—1 R 5 Claims



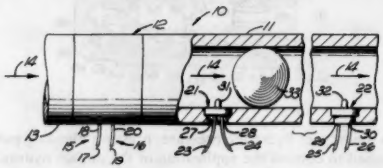
The atmospheres of a salt chamber and a test chamber are transported in a closed-loop back and forth between the chambers, the loop including heating and cooling means for adding and subtracting equal temperature increments as the atmospheres are in transit between the chambers. The salt chamber remains at a constant temperature to maintain a stabilized relative humidity. Heat added to the stablized atmosphere as it passes to the test chamber is subtracted during the return flow. The relative humidity of the test chamber varies with the heat increments to permit RH sensors and the like to be calibrated.

3,832,883

BALL PROVER AND COMPONENTS THEREOF

Walter Fah Min Tyau, Orange, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Nov. 9, 1972, Ser. No. 304,997
Int. Cl. G01f 25/00
U.S. Cl. 73—3 17 Claims



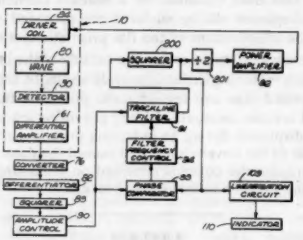
Flowmeter test apparatus called a ball prover including a ball rollable in a pipeline past two axially spaced, spring biased, normally open, momentary contact switches which, when closed, discharge a capacitor, the capacitor having a charging rate lower than its discharging rate to discriminate against pulses which would normally be produced by the bouncing of one or more of the switch contacts. Pulse discrimination may also be achieved through the use of a regenerative amplifier that has hysteresis. Contact bounce would otherwise cause an erroneous total flow reading. A gate control circuit responsive to the voltage across the capacitor operates a gate to pass flowmeter pulses which are counted and indicated. The total of the pulses counted then should be directly proportional to the total flow in the pipeline between the times that the switches are closed.

3,832,884

DENSITOMETER

Gerald Lance Schlatter, Boulder, Colo., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed July 10, 1972, Ser. No. 270,335
Int. Cl. G01n 9/00
U.S. Cl. 73—32 2 Claims



A densitometer which utilizes a thin vane vibrated by a magnetostrictive tube. A piezoelectric crystal pickup feeds an amplifier and tracking filter to energize a driver coil around the magnetostrictive tube. The device is, in effect, an electromechanical oscillator in that the coil is driven in phase with the detected signal. Vibration thus increases in amplitude until limited electrically. A linearization circuit provides an output D.C. voltage directly proportional to fluid density, gas or liquid, which may be impressed upon a conventional D.C. voltmeter calibrated linearly in density. A great many features, both in the mechanical structure and in the electronics, make it possible to easily calibrate the instrument to read, for example, to within an accuracy tolerance of ±0.1 percent over a fluid density range of, for example, from about 0.08 pounds per cubic foot to 80.0 pounds per cubic foot. Another out-

standing advantage of the invention relates to a probe-type construction which may be used in a pipeline of any size. Still another feature of the invention resides in the use of a divide-by-two divider to reconcile the driver frequency to the crystal frequency.

3,832,885

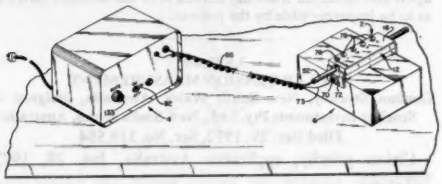
METHOD AND APPARATUS FOR INSPECTING SEALED CONTAINERS

Gary G. Hayward, and Samuel O. Raymond, both of West Falmouth, Mass., assignors to Benthos, Inc., N. Falmouth, Mass.

Filed Oct. 25, 1972, Ser. No. 300,518

Int. Cl. G01m *3/24*

U.S. Cl. 73—52 **21 Claims**



The invention is a method and apparatus for inspecting containers, e.g., vacuum-packed cans of food, enclosed in a shipping carton or case. It comprises providing a row of electromagnetic transducer coils, moving the row of coils relative to the carton so that the several rows of containers in the carton are successively aligned with the coils, and sequentially and repeatedly energizing the coils at a selected repetition rate while they are aligned with a row of containers so that the end closures of the containers will be caused to vibrate at a frequency which is a function of the internal pressures of the containers and so that the sounds produced by the vibrating end closures provide a tonal pattern distinctive of the presence or absence of a container with unsatisfactory internal pressure.

3,832,886

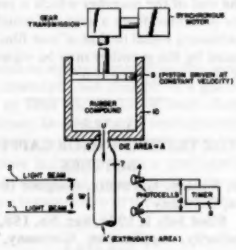
DIE SWELL TESTING

Irwin Pliskin, New York, N.Y., assignor to Uniroyal, Inc., New York, N.Y.

Filed June 5, 1972, Ser. No. 259,982

Int. Cl. G01n *11/04*

U.S. Cl. 73—56 **4 Claims**



A method and apparatus for instantaneously measuring the die swell of an extrudate is disclosed. A polymeric material such as a rubber or plastic is extruded at a constant volumetric flow rate. The die swell of the material is determined by (a) measuring the time it takes the extrudate to move a given distance almost immediately after leaving the die. In the preferred arrangement, the said distance is made numerically equal to the extrusion velocity, whereby the measured time is the value of the die swell.

3,832,887

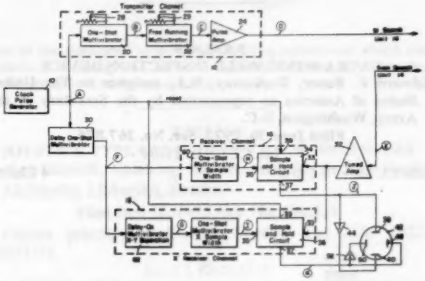
ULTRASONIC INSPECTION APPARATUS

Milton F. Zeutschel, Issaquah, Wash., assignor to Automation Industries, Inc., Los Angeles, Calif.

Continuation of Ser. No. 836,436, June 25, 1969, abandoned. This application Dec. 23, 1971, Ser. No. 211,345

Int. Cl. G01n *29/04*

U.S. Cl. 73—67.5 R **22 Claims**



A nondestructive material tester is described which transmits ultrasonic energy into a workpiece and receives the returning ultrasonic energy from the workpiece. The return signals are received by two different channels which sample the received signal at two time-displaced intervals such as a phase shift of 90° from the other. The pair of sample signals is displayed to precisely indicate the amount of phase displacement of the received signal.

3,832,888

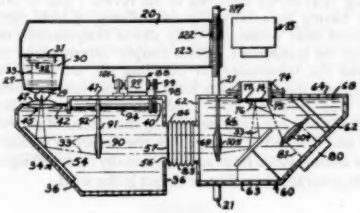
ACOUSTICAL IMAGING EQUIPMENT CAPABLE OF INSPECTING AN OBJECT WITHOUT SUBMERGING THE OBJECT IN A LIQUID

Gary N. Langlois, Richland, Wash., assignor to Holosonics, Inc., Richland, Wash.

Filed Jan. 17, 1973, Ser. No. 324,284

Int. Cl. G01n *29/04*

U.S. Cl. 73—67.5 H **4 Claims**



Acoustical imaging equipment is described for inspecting the internal structure of an object without submerging the object in a liquid. The object is placed in an air space between two membrane coupling members that are deformable to the contour of the object. A mechanism is provided to move at least one of the membrane coupling members toward the other membrane to physically contact and deform to the contour of the object to couple the object acoustically to the membrane. Acoustical transmitting liquid is provided to the membrane coupling members to transmit acoustical wave energy from a transducer through the object to a detector sen-

sitive to the acoustical wave energy. A first acoustical lens is positioned in the path of the object modified acoustical beam and has a focal point between the two membranes. A second acoustical lens is positioned in the path of the object modified acoustical beam between the first acoustical lens and the acoustical detector in which the second acoustical lens has a focal point at the detection plane for focusing acoustical rays from the first acoustical lens in the detection plane. A means for adjusting the position of the first acoustical lens enables the apparatus to image various planes throughout the object at the detection plane without changing the magnification of the image.

3,832,889

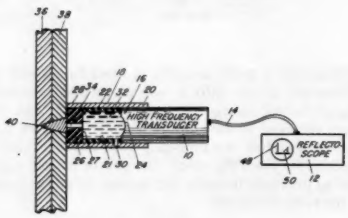
ULTRA-SONIC WELD INSPECTION DEVICE

Edward F. Bauer, Rockaway, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed June 30, 1972, Ser. No. 267,876

Int. Cl. G01n *29/04*

U.S. Cl. 73—71.5 U **4 Claims**



This invention relates to an improved transducer for an ultrasonic weld inspection system of the type wherein the system utilizes a reflectoscope for electronically generating and detecting ultrasonic energy, a device for positioning the transducer adjacent said weld, a transducer for focusing said energy, a cable for electrically coupling the reflectoscope to the transducer to detect weld flaws. The improved transducer has a body sleeve slidably affixed to the transducer, a compliant end cap operatively disposed in the forward end of the body sleeve having an axially aligned collimating hole therein, a compliant liner within the body sleeve intermediate the end cap and the transducer, a fluid coupler intermediate the end cap and the transducer for coupling the ultrasonic energy directly into the weld in the form of a clean narrow collimated beam free from all stray and unwanted transmitted and reflected energy thereby permitting the return of an interface signal and first reflection signal to the detecting means which can be distinguished from any additionally returned signal that may be generated by a flaw or defect in the weld.

3,832,890

NON-CONTACT TONOMETER CORNEAL MONITORING SYSTEM

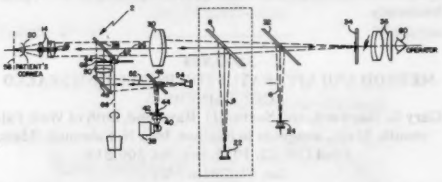
Bernard Grolman, Worcester, and Robert G. Lavallee, Ashland, both of Mass., assignors to American Optical Corporation, Southbridge, Mass.

Filed Dec. 29, 1971, Ser. No. 213,661

Int. Cl. A61b *3/16*

U.S. Cl. 73—80 **5 Claims**

A non-contact tonometer in which the pneumatic, alignment, and corneal monitoring systems are all disposed along the same axis normal to the cornea. Monitoring light incident



upon and reflected from the cornea is in the infrared range so as to be imperceptible by the patient.

3,832,891

OCULAR TENSION MEASUREMENT

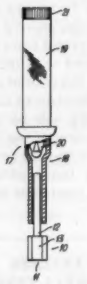
Gordon Stuckey, New South Wales, Australia, assignor to Stuckey Investments Pty. Ltd., New South Wales, Australia

Filed Dec. 29, 1972, Ser. No. 319,554

Claims priority, application Australia, Jan. 28, 1972, 7792/72

Int. Cl. A61b *3/16*

U.S. Cl. 73—80 **9 Claims**



An applanation tonometer which utilizes the principle of total internal reflection to permit use thereof by an opthol-mologist. The tonometer comprises a member of pre-determined weight which is adapted for longitudinal sliding movement in and from a support and for resting upon the cornea of a patient. The end of the member which is rested upon the patient's cornea is formed from a material which has a refractive index approximately equal to that of tear film fluid whereby an area applanated by the member may be viewed at an angle incident to the plane of applanation.

3,832,892

DEVICE FOR TESTING AND/OR CAPPING OF GLASS BOTTLES

Walter Bohl, Vehlen, Germany, assignor to Firma Hermann Heye, Albe, Germany

Filed July 1, 1971, Ser. No. 158,675

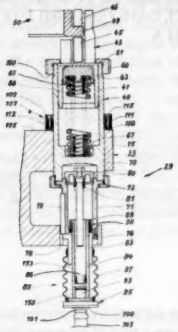
Claims priority, application Germany, July 3, 1970, 2033031

Int. Cl. G01n *3/30*

U.S. Cl. 73—94 **15 Claims**

A device for testing and/or capping of glass bottles has an upright cylinder which is reciprocable in a holder and a piston which is reciprocable in the cylinder and tracks a stationary cam in response to rotation of the holder so that the piston moves axially downwardly and pushes the cylinder toward a bottle through the intermediary of helical springs. The

cylinder carries a ram which bears against the mouth of a bottle while the piston moves downwardly whereby a satisfactory bottle arrests the ram and the cylinder while the piston continues to move downwardly in order to stress the springs. If the



bottle breaks, the springs expand and abruptly propel the cylinder against a shock absorber which is inserted between a cap on the cylinder and an arm of the holder to cushion the impact of the cylinder.

3,832,893

DEVICE FOR INDICATING OR CONTROLLING LOAD CHANGES IN STEAM OR GAS TURBINES

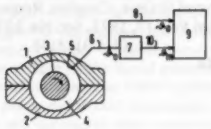
Hans Georg Dlugos, and Friedrich Zerrmayr, both of Erlangen, Germany, assignors to Kraftwerke Union Aktiengesellschaft, Mulheim, Germany

Filed Oct. 16, 1972, Ser. No. 298,032

Claims priority, application Germany, Oct. 16, 1971, 2151661

Int. Cl. G01l 5/12; F02c 1/00

U.S. Cl. 73—116 **5 Claims**



A device for indicating or controlling the respective permissible limits of intended load changes of a gas or steam turbine is operable to limit the speed of load changes for the steam or gas turbines. In operation a time-temperature curve representing the average integral temperature in the turbine shaft relative to time is derived from a continually measured temperature, such measured temperature corresponding to the variable surface temperature of the turbine shaft.

3,832,894

CHASSIS DYNAMOMETER

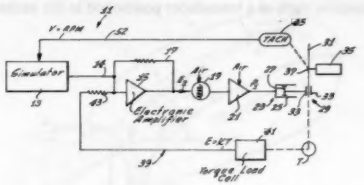
Edmond R. Pelta, Pacific Palisades, Calif., assignor to Autoscan, Inc., Los Angeles, Calif.

Filed Sept. 10, 1969, Ser. No. 856,535

Int. Cl. G01l 5/13

U.S. Cl. 73—117 **16 Claims**

A test apparatus including a dynamometer for applying a load to the engine of a vehicle and a control system for controlling the load applied to the dynamometer so that the load represents or simulates actual known driving conditions. One component of the load applied by the dynamometer is a func-



tion of the simulated slope of the driving surface on which the vehicle is running and other components of the load are dependent upon simulated vehicle velocity.

3,832,895

JOYSTICK-TYPE CONTROL WITH STRAIN SENSORS

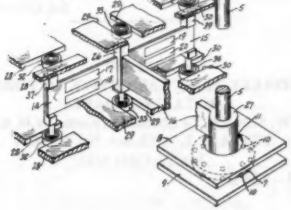
Holger Strandh, Goteborg, Sweden, assignor to Saab-Scania Aktiebolag, Linkoping, Sweden

Filed Oct. 16, 1973, Ser. No. 406,829

Claims priority, application Sweden, Oct. 18, 1972, 13411/72

Int. Cl. G01l 3/10

U.S. Cl. 73—133 R **3 Claims**



An actuator movable in a plane parallel to coordinate *x* and *y* axes is biased to a normal position by a leaf spring parallel to the *x* axis and flexible in the *y* directions. A lever parallel to the *y* axis has the actuator at one end, a rigid connection to the middle of the leaf spring at the other. The lever is constrained to lengthwise motion and to swinging about said connection. The leaf spring ends are confined to *x* direction motions. Strain sensors, secured to the leaf spring between its middle and its ends, are connected in bridge circuits that produce outputs respectively corresponding to *x* and *y* components of actuator displacement.

3,832,896

TORQUE METER HAVING A MOVEMENT TRANSMISSION MEMBER

Borje Gunnar Arne Lonnroth, Vallingby, Sweden, assignor to Statens Vag-Och Trafikinstitut, Stockholm, Sweden

Filed Dec. 16, 1971, Ser. No. 208,865

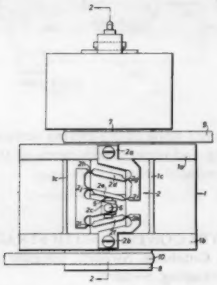
Claims priority, application Sweden, Dec. 21, 1970, 17344/70

Int. Cl. G01l 3/14

U.S. Cl. 73—136 A **10 Claims**

A torque meter comprises a hub or the like having two parts being relatively movable under the influence of an applied torque. A separate movement transmission member is attached between the said parts. It comprises integral link por-

tions defined by thin hinges or pivots, said link portions extending in an oblique direction relative to a line connecting opposite places of attachment of the member to the said parts of the hub. One of said link portions is connected to a gauging equipment such as a transducer positioned in the center of the



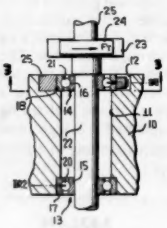
hub. A circumferential distortion between the said parts due to an applied torque will bring about a movement substantially perpendicular hereto, i.e. being parallel with the hub axis, of the last mentioned link portion of the transmission member which movement will be recorded by said gauging equipment as a measure of the applied torque.

3,832,897

STATIONARY DEVICE SENSITIVE TO TORQUE IN ROTATING SHAFTS

Cornelius W. Schenck, 72 School St., Keene, N.H. 03431

Filed Apr. 2, 1973, Ser. No. 346,811
Int. Cl. G01l 3/02
U.S. Cl. 73—136 R **19 Claims**



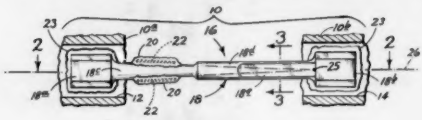
This disclosure relates to a stationary device for measuring stresses particularly in a rotating shaft comprising a housing, a bore in the housing, a ring-like member in the bore, a bearing assembly within the ring-like member, the bearing assembly having inner and outer races and anti-friction elements therebetween, a shaft mounted for rotation within the bearing assembly, transducer means between the bearing assembly and the housing for detecting forces caused by deflection of the shaft, and means for translating the detected deflection forces into the output torque of the shaft.

3,832,898

DUAL-MOUNT ELECTROMECHANICAL DEFLECTION SENSOR

George J. J. Randolph, Jr., 1505 177th Ave., N.E., Bellevue, Wash. 98008

Filed Sept. 24, 1973, Ser. No. 400,184
Int. Cl. G01b 1/04; G01l 1/18; G01b 7/18
U.S. Cl. 73—141 A **7 Claims**



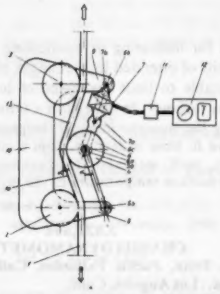
A dual-mount deflection sensor including an elongated carrier for supporting a pair of piezoresistive elements. The carrier is unitary, and includes a pair of end parts (for securing it to an external body) and an elongated slender stem joining such parts. The stem has one portion with an outer surface of revolution for receiving the piezoresistive elements, and another portion with a noncircular, flattened, elongated transverse cross section for providing a preferential bending plane in the carrier. A modified carrier contains transverse slots in the second-mentioned portion of the stem for minimizing the effect on the piezoresistive elements of axially carried forces in the carrier.

3,832,899

DYNAMOMETRICAL DEFLECTION MEASURING METHOD AND APPARATUS

Ioan Victor Nicolau, Prahova, Romania, assignor to Institutal De Cercetare Si Proiectare Tehnolocica Pentru Industria Extractiva De Petrol Si Gaze, Cimpina, Romania

Filed Feb. 17, 1972, Ser. No. 227,024
Int. Cl. G01l 5/08
U.S. Cl. 73—144 **3 Claims**



In order to measure by the deflection method the tension exerted in a belt or chain cable without producing errors of measurement due to variations in the deflection angle, the ap-

paratus utilizes a deflection system comprising a compression dynamometer and two articulated bars. The dynamometer is axially positioned and joined with one of the bars. The two bars are each journalled at one end at a predetermined distance from two fixed deflection points, and at their other ends are joined together to a deflection roll. The two bars of the deflection system are thus constantly maintained parallel to the deflected cable or belt portions. Accordingly the angel between the two bars always remains equal to the deflection angle of the cable or the chain, regardless of the numerical value of the deflection angle. As a result, the compression force in each of the two bars, which is measured by the dynamometer, is always proportional to the tension force in each of the two deflected cable or chain portions, independently of variations in the deflection angle. The apparatus is particularly useful as a drillometer on the dead end of an operating cable, or as a torsiometer mounted on the chain of an intermediate transmission, or on the actuating transmission of the enclosed rotary table of drilling rigs in the oil and gas industry.

3,832,900

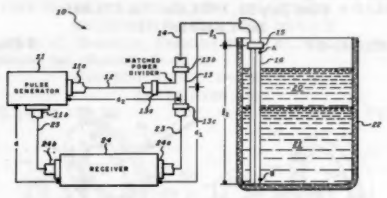
APPARATUS AND METHOD FOR MEASURING THE LEVEL OF A CONTAINED LIQUID

Gerald F. Ross, Lexington, Mass., assignor to Sperry Rand Corporation, New York, N.Y.

Filed June 28, 1971, Ser. No. 157,248

Int. Cl. G01f *23/28*; G01n *23/24*; G04f *11/00*

U.S. Cl. 73—290 R **7 Claims**



A method and apparatus for measuring the level of a contained liquid, which include a device for generating a baseband pulse signal of subnanosecond duration that is coupled into a transmission line which is immersed in the contained liquid. The surface of the liquid creates a discontinuity at a point on the transmission line which produces a reflection of the baseband pulse signal that propagates back along the transmission line and is coupled into a receiver unit which includes a plurality of coincident detectors. A timing signal produced synchronously with the baseband pulse signal is coupled through a pulse circuit and a delay circuit in the receiver unit. The receiver unit establishes the level of the contained liquid by sensing the space-time coincidence between the baseband pulse signal and the timing signal. A display unit which includes a plurality of indicator lights associated respectively with the plurality of coincident circuits in the receiver unit provides a visual indication of the level of the contained liquid.

3,832,901

FUEL LEVEL INDICATOR FOR A MOTORCYCLE

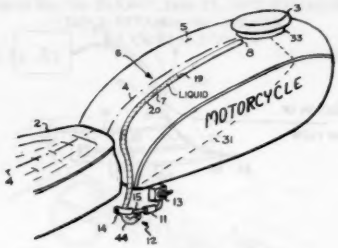
Robert H. Girvin, III, Holliston, Mass., assignor to KG Engineering, Inc., Holliston, Mass.

Filed Oct. 26, 1972, Ser. No. 301,225

Int. Cl. G01f *23/02*

U.S. Cl. 73—325 **6 Claims**

A gasoline level indicator for a motorcycle having the fuel tank in front of the operator's seat consists of a transparent plastic tube vented at the top running downward over the tank and connects to the fuel line from beneath the tank. The tube is contoured to lie flat on the outside of the tank in full view of the operator so that the operator can observe the level of fuel in the tube which is the same as the level in the tank.



3,832,902

TEMPERATURE MEASURING METHOD AND DEVICE

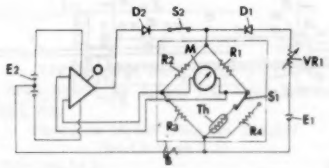
Susumu Usami, Nagoya; Yasuhiro Goto, Gifu, and Takashi Yamashita, Nagoya, all of Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Nishikasugai-gun, Aichi Prefecture, Japan

Filed Sept. 9, 1971, Ser. No. 179,054

Claims priority, application Japan, Sept. 12, 1970, 45-79855

Int. Cl. G01k *1/18, 7/24*

U.S. Cl. 73—362 AR **5 Claims**



A method and a device for measuring an inside temperature or a real temperature of a substance which has a difference in temperature between the inside thereof and the surface thereof, comprising a preheating step or circuit for heating, prior to measuring, a heat sensitive element such as a thermistor to a temperature close to said inside temperature or said real temperature. With such a method or a device, the time required for measuring the inside temperature or the real temperature of the substance as mentioned above can be much shortened.

3,832,903

STAGNATION PRESSURE PROBE

James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Michael J. Goodyer, 8 Bassett Green Rd., Southampton, England

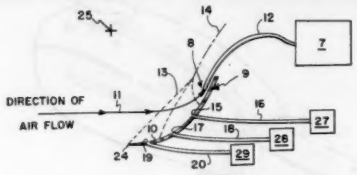
Filed Sept. 7, 1972, Ser. No. 287,149

Int. Cl. G01l *7/00*

U.S. Cl. 73—388 **15 Claims**

A method and apparatus for measuring the stagnation pressure of supersonic velocity gas streams without the generation

of shock waves which interfere with such measurements. The technique is insensitive to type of gas and Mach number and is



therefore particularly useful in the study of jet engine exhausts.

3,832,904

APPARATUS FOR MONITORING AND TAKING GAS SAMPLES IN SHAFT FURNACES

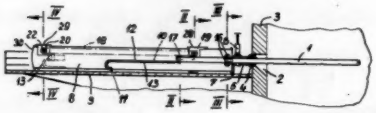
Heinz Dreuw, Mulheim/Ruhr; Hans-Jurgen Mischke, Essen, both of Germany; Franz Lippeck, deceased, late of Essen-Borbeck, Germany (by Irmgard Lippeck, heir); Gitia Bohnenkamp, Essen, and Marion Lippeck, heirs, Homberg, both of Germany, assignors to Fried Krupp Gesellschaft mit beschrankter Haftung Altendorfer Strasse, Essen, Germany

Filed Mar. 14, 1973, Ser. No. 341,173

Claims priority, application Germany, Mar. 15, 1972, 2212396

Int. Cl. G01n *1/22*

U.S. Cl. 73—421.5 A **6 Claims**



Apparatus for automatically taking measurements and samples of gas during the operation of shaft-type furnaces, the apparatus including a gastight housing sealingly connected to the wall of a furnace and carrying within it a horizontally-disposed probe mounted for reciprocal movement through the wall and means to move the probe reciprocally. The measurements and samples are withdrawn from the housing through a sealed passage. The movement of the probe is controlled by a drive device disposed outside the housing and communicating with the probe mount through sealed passages in the housing.

3,832,905

BEARING FOR A BALANCING MACHINE

Gunther Himmler, Darmstadt, and Klaus-Peter Ohms, Darmstadt-Eberstadt, both of Germany, assignors to Gerb KG Hofmann, Darmstadt, Germany

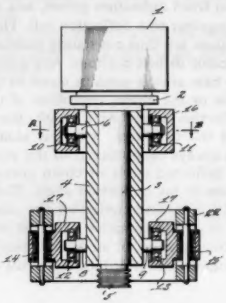
Filed Apr. 13, 1973, Ser. No. 350,966

Claims priority, application Germany, May 3, 1972, 2221648

Int. Cl. G01m *1/22*

U.S. Cl. 73—472 **6 Claims**

A bearing structure for a force measuring machine having a frame mounting a workpiece for rotation, a set of ball bearings at each of two bearing points and a vibration transducer associated with each bearing point for detecting the force generated in a measuring direction perpendicular to the axis of rotation of the workpiece. The ball bearings at both points



are mounted so as to permit no torque in the measuring direction and at one point to permit movement along the axis of rotation of the workpiece.

3,832,906

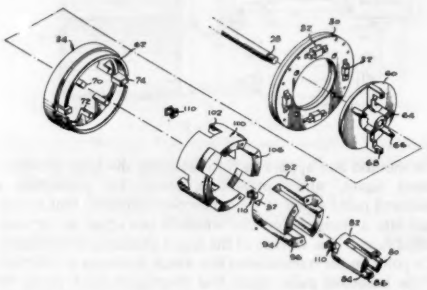
GIMBAL STRUCTURE FOR DYNAMICALLY TUNED FREE ROTOR GYRO

Robert J. G. Craig, Malibu, Calif., assignor to Teledyne Industries, Los Angeles, Calif.

Filed July 30, 1973, Ser. No. 375,841

Int. Cl. G01c *19/18*

U.S. Cl. 74—5 F **7 Claims**



A dynamically tuned, free rotor gyro is provided with three concentric gimbals. The principal moments of inertia of the gimbals are selected to completely cancel the errors of twice spin frequency rectification effects by merely adjusting the inertias of the gimbals.

3,832,907

PUSHBUTTON SYSTEM TUNER

Yukitomo Yasuda, Urawa, Japan, assignor to Clarion Co., Ltd., Tokyo, Japan

Filed Mar. 21, 1972, Ser. No. 236,733

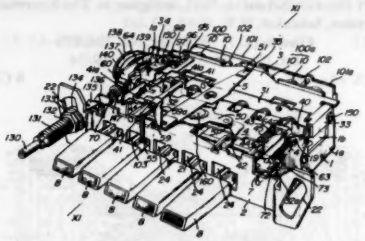
Claims priority, application Japan, Apr. 23, 1971, 46-26106; May 28, 1971, 46-43308[U]; Sept. 2, 1971, 46-78871[U]; Sept. 2, 1971, 46-78872[U]; Sept. 30, 1971, 46-88744[U]

Int. Cl. H03j *5/10*

U.S. Cl. 74—10.33 **24 Claims**

A pushbutton tuner is to provide smooth and exact tuning and channeling operations with a thin and compact mechanism, which is composed of a machine frame, coil cases furnished on said machine frame, upper plate limitedly posi-

tioned on said coil cases, moving plate and rotary frame equipped at the front side of said upper plate, a series of cores arranged on said moving plate and getting into and out respective coils in said coil cases, a series of pushbuttons having



respectively arms acting on said rotary frame to move said moving plate for the coil cases, and indicator transmitting movement of said moving plate to indicate channeling conditions in the front side of the machine frame.

3,832,908

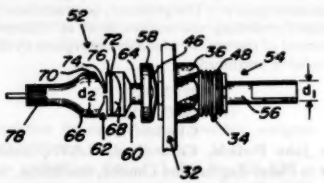
ONE PIECE PLASTIC TUNING SHAFT FOR A RADIO RECEIVER OR THE LIKE DEVICE

Franklin C. Brewster, Franklin Park, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Mar. 2, 1973, Ser. No. 337,624

Int. Cl. F16h *35/18*

U.S. Cl. 74—10.33 **7 Claims**



A one piece integrally formed manual tuning shaft for a radio receiver includes a first rotatable driving shaft portion and a second rotatably driven shaft portion. An integrally formed universal joint section is provided in the second driven shaft portion; the universal joint section including first and second opposing shaft pieces and a plate portion joined therebetween. Each of the shaft pieces is joined to the plate portion by an integrally formed hinge; the hinges being at right angles with respect to each other to permit angular movement of the shaft pieces with respect to each other. In one embodiment, a flange formed between the first and second shaft portions is enlarged and resiliently bendable to conform to the curved wall of a mounting bushing received on the first driving shaft portion to provide rotational resistance to minimize vibration of the tuning shaft assembly in a radio receiver. In another embodiment of the tuning shaft assembly, the driving shaft portion includes a compressible enlarged area for providing a friction fit between the shaft portion and a standard mounting bushing received thereon to minimize the effect of vibrations and shock.

3,832,909

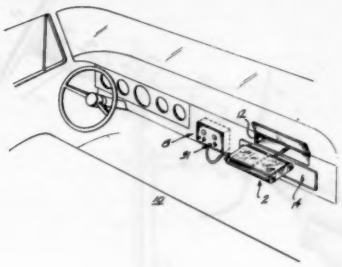
DASHBOARD-MOUNTED AUTOMATIC ROUTE INFORMATION DISPLAY DEVICE

Charles Pflin, P.O. Box 18, Eastsound, Wash. 98245

Division of Ser. No. 265,647, June 23, 1972. This application July 2, 1973, Ser. No. 375,628

Int. Cl. F16h *37/00*

U.S. Cl. 74—12 **3 Claims**



When it is put to use, the device is detachably engaged with a drive unit on the dashboard of the vehicle. The drive unit rotates pairs of sprockets on which the route information map is engaged in the device; and if desired, another map may be engaged with the sprockets, in superposition with the main map, to display a side route taken from the main route. This is possible because the route information on each map is represented in straight-line projection, notwithstanding that each roadway undergoes turns over the course thereof.

3,832,910

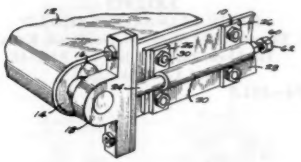
TELESCOPIC BELT TIGHTENER

Charles Brate Bryant, Rt. 1, Box 150, Wildwood Point Rd., Hartland, Wis.

Filed June 15, 1972, Ser. No. 263,337

Int. Cl. F16h *7/10*

U.S. Cl. 74—242.14 R **5 Claims**



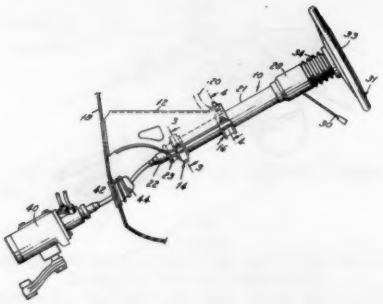
A belt tightener includes an outer tube fixed to mounting brackets and an inner tube telescoped in the outer tube with one end of the inner tube having a plate which is connectable to a bearing block for the shaft which supports the endless belt. A key welded to the inside of the outer tube and extending longitudinally thereof is received in a keyway in the inside tube to prevent relative rotation between the tubes. An adjusting bolt extends into the inner and outer tubes and is threadably received by a nut welded to the other end of the inside tube.

3,832,911

ENERGY ABSORBING STEERING COLUMN

Roger P. Daniel, Dearborn, and Alex Rhodes, West Bloomfield Twsp., both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 4, 1972, Ser. No. 311,982
Int. Cl. B62d 1/18
U.S. Cl. 74—492 1 Claim



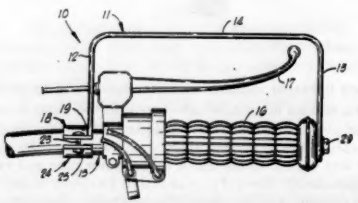
An energy absorbing steering wheel support for a motor vehicle according to an embodiment of this invention includes a steering column outer tube with a telescopic steering shaft rotatably supported therein. A deforming assembly and a releasable support assembly connect the column tube to vehicle support structure. The deforming assembly has projections which engage preformed grooves in the surface of the column tube. The projections are constructed to plastically deform the tube upon its axial displacement and thereby absorb most of the energy of an impact load upon the column. The releasable assembly secures the steering column assembly to the vehicle support structure during normal operation of the steering system and is constructed to release the column for forward displacement when subjected to a breakaway force exceeding a predetermining minimum value caused by an impact. The steering wheel is supported on the upper end of the steering shaft. A convoluted energy absorbing can is situated between the end of the steering column tube and the hub of the steering wheel. The convoluted can is supported only at its forward end where it engages the outer column tube and does not normally carry torsional or bending loads. The convoluted can is constructed to absorb the initial portion of an impact load on the column.

3,832,912

HANDLEBAR SAFETY SHIELD

Daniel W. Edwards, 211 Sherman, Goodland, Kans. 67735

Filed Feb. 22, 1973, Ser. No. 334,742
Int. Cl. B62k 21/26
U.S. Cl. 74—551.8 2 Claims



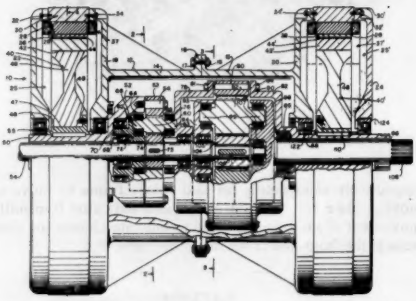
A handlebar safety shield fitted about the gripping control surfaces of a motorcycle handlebar in a manner to provide a protective shield for the hands of the motorcycle operator and to the hand controls of the motorcycle.

3,832,913

MAGNETIC TORQUE CONVERTOR FOR PROPULSION SYSTEMS

Robert Helmer, Setauket, N.Y., assignor to The Enercon Corporation, Setauket, N.Y.

Filed Sept. 7, 1972, Ser. No. 286,876
Int. Cl. F16h 57/10; H02k 49/04
U.S. Cl. 74—764 8 Claims



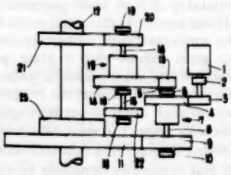
A magnetic torque convertor includes two planetary gear sets respectively coupled to two coercive force brakes which control their driving speed. An input drive shaft is coupled to one planetary gear set which includes a planetary gear carrier coupled to a ring gear of the other planetary gear set. An output drive shaft is coupled to a planetary gear carrier of the other planetary gear set. The planetary gear sets have different gear ratios for driving the output shaft at different speeds under control of the brakes which are energized by direct current of variable magnitude.

3,832,914

GEARBOX

Maurice John Pinfield, Carlingford, N.S.W., Australia, assignor to Placer Exploration Limited, Smithfield, New South Wales, Australia

Filed Dec. 11, 1972, Ser. No. 313,925
Claims priority, application Australia, Dec. 17, 1971, 7422/71; Dec. 6, 1972, 49718/72
Int. Cl. F16h 5/00; F16d 41/00
U.S. Cl. 74—812 4 Claims

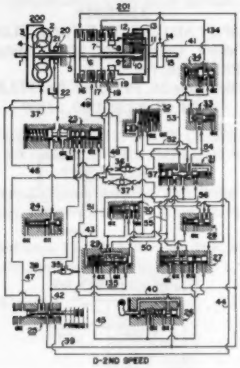


A gearbox having a gear train connecting an input shaft to an output shaft, two unidirectional driving clutches in the gear train whereby by reversing the rotation of the input shaft the output shaft will turn at different speeds but in the same direction.

3,832,915
HYDRAULIC CONTROL APPARATUS FOR AN AUTOMATIC VEHICLE TRANSMISSION

Takeo Hiramatsu, Kyoto, Japan, assignor to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 5, 1972, Ser. No. 295,111
Claims priority, application Japan, Oct. 5, 1971, 46-78155
Int. Cl. B60k *29/00*
U.S. Cl. 74—869 4 Claims

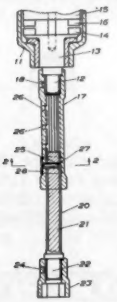


A hydraulic control apparatus for automatic vehicle transmission having a plurality of clutches which are clutched and declutched for transmitting different change gear ratios to an output shaft driven from a vehicle engine drive shaft. A plurality of servo mechanisms sequence the clutching and declutching of the clutches to effect smooth speed changes or gear ratio changes. A mechanism in the control apparatus controls a variable overlapping period between the changes of gear ratios as a function of the drive torque.

3,832,916
IMPACT WRENCH

Knut Christian Schoeps, Nacka, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Jan. 24, 1973, Ser. No. 326,526
Claims priority, application Sweden, Jan. 31, 1972, 1047/72
Int. Cl. B25b *19/00*
U.S. Cl. 81—52.3 13 Claims

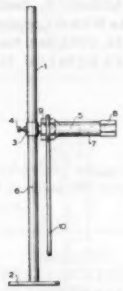


A rotary impact wrench transmits its impacts through a torsion unit with variable spring characteristics. The torsion unit comprises a torsion bar that is inserted into a sleeve with a selectively variable part of its length protruding from the sleeve.

3,832,917
DEVICE FOR LOOSENING WHEEL NUTS OR LUGS OF AUTOMOBILE WHEELS

Franz Feith, 61 Gilbertstrasse, 2 Hamburg 50 (Altona), Germany

Filed Sept. 26, 1972, Ser. No. 292,341
Claims priority, application Germany, Sept. 29, 1971, 7136849
Int. Cl. B25b *13/00, 21/00, 13/58*
U.S. Cl. 81—53 R 3 Claims

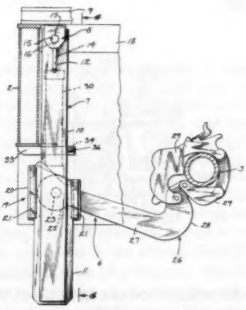


An upstanding rod-like member with a supporting base therefor has a very short collar member slidable thereon for connection thereto at a selected height by a thumb-screw. A rod extends outwardly from the short collar at right angles to the upstanding rod-like member and rotatably engages the hollow bore of a straight socket wrench having sockets on either end thereof. A spanner wrench slips over the socket wrench and engages the socket end adjacent the collar and the long arm of the spanner wrench is used as a lever for loosening and/or tightening wheel nuts or lugs engaged by the socket at the opposite end of the socket wrench.

3,832,918
BREAKOUT WRENCH

David M. Lang, South Milwaukee; Jack D. Nelmark, New Berlin, and Matthew Smith, Milwaukee, all of Wis., assignors to Bucyrus-Erie Company, South Milwaukee, Wis.

Filed Nov. 23, 1973, Ser. No. 418,587
Int. Cl. B25b *13/50*
U.S. Cl. 81—57.33 7 Claims



A breakout wrench for drilling apparatus includes a pivotably mounted slide arm upon which a carriage is slidably mounted and a set of wrench jaws which are attached to a wrench arm swingably disposed upon the carriage for engaging and loosening a drill string section of the drilling ap-

paratus. A hydraulic cylinder associated with and disposed beneath the slide arm is attached to the carriage to provide movement of the carriage along the slide arm and impart a wrenching movement to a drill string section through the accompanying wrench arm. A stop pin is provided to secure the slide arm in a stored position during normal drilling operations.

3,832,919

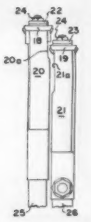
ORBITAL CRANKSHAFT LATHE MECHANISM AND METHODS OF MACHINING

John A. Jacobi, and Anthony E. Sedlar, both of Saginaw, Mich., assignors to The Wickes Corporation, Saginaw, Mich.

Filed Apr. 16, 1973, Ser. No. 351,795

Int. Cl. B23b *1/00, 5/18*

U.S. Cl. 82—1 C **13 Claims**



A crankshaft lathe having orbiting girts mounting tool holders which have axially overlapping tools for simultaneously machining the side-by-side eccentric crank pins of a multiple throw crankshaft having at least a pair of such crank pins in axially abutting angularly offset relation. The invention also is concerned with a method of machining such crankshafts wherein the crank pins are first rough machined in a manner to leave some material at the interface of the abutting pins and finally are finished machined by overlapping tools which during a machining orbit must in effect pass through one another.

3,832,920

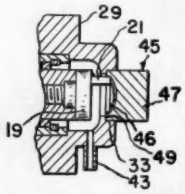
APPARATUS FOR AND METHOD OF EDGING A NON-RIGID LENS

Richard J. Wrue, Rochester, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed July 13, 1972, Ser. No. 271,431

Int. Cl. B23b *5/00*

U.S. Cl. 82—20 **3 Claims**



Apparatus for and method of edging a lens while it is firmly supported or secured in a mold. When unsupported the lens is non-rigid. The preferred embodiment includes a rotatable shaft supported at one end by an electric motor and carrying a knife or cutter at its unsupported free end. Slidably supported on the free end of the shaft is a chuck housing including a sleeve portion and a holder or chuck portion. The chuck portion is dimensioned to receive the end of a lens mold containing the lens cavity so as to position the peripheral edge of the lens and the adjoining face of the mold opposite the rotating knife. A suitable source of vacuum is coupled to the chuck housing adjacent the chuck portion to remove chips generated in the cutting operation. The vacuum may also be used to hold the lens and mold assembly in place. Movement of the chuck portion towards the cutter results in the removal of a portion of the peripheral edge of the supported lens and a corresponding amount of the face of the lens mold.

3,832,921

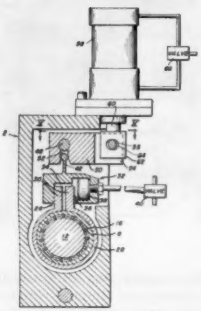
2-WAY ADJUSTABLE TOOL BLOCK

Richard J. Fabeck, Union Lake, Mich., assignor to Carmet Company, Pittsburgh, Pa.

Filed June 26, 1973, Ser. No. 373,815

Int. Cl. B23b *3/00, 21/00*

U.S. Cl. 82—1 A **6 Claims**



An adjustable tool block assembly includes a housing, a rotatable eccentric sleeve mounted in the housing and a tool mounted on the axis of the internal surface of the sleeve. A clamp surrounds a portion of the rear end of the sleeve and is moved between operative and inoperative positions by a fluid motor. A second fluid motor moves the clamp when in operative position and hence, rotates the sleeve to change the effective cutting radius of the tool.

3,832,922

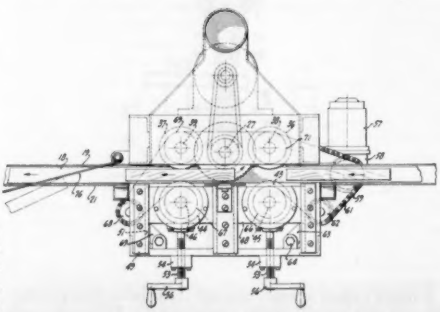
AUTOMATIC BACK RIP MACHINE

Bud D. Stout, Red Bluff, Calif., assignor to Commander Industries, Inc., Red Bluff, Calif.

Filed Mar. 19, 1973, Ser. No. 342,678

Int. Cl. B27b *5/04, 25/02;* **B23d** *47/04*

U.S. Cl. 83—4 **1 Claim**



An automatic back rip machine for trimming generally rectangular individual blocks includes a frame arranged ad-

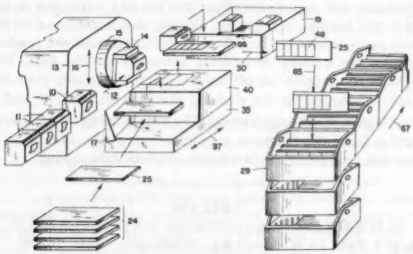
jacent a predetermined path along which the individual wood blocks are propelled. On the frame and intersecting the path is a saw mounted to extend in a horizontal plane virtually across the path. There are means for confining the sides of the wood blocks on the path and there are driven rollers which pinch the sides of the blocks in the vicinity of the saw, the rollers being disposed on the opposite sides of the saw and on the opposite sides of the path as well. At least one of the rollers has a groove for receiving part of the saw so that blocks advanced in the path to the saw are gripped or held and trimmed prior to being released and conveyed away from the saw.

3,832,923

METHOD FOR THE PRODUCTION OF MICROTOME SLICES AND DEVICE FOR THE IMPLEMENTATION OF THE METHOD

Gustav Lassmann, Vienna, Austria, and Peter Rieger, Walldorf, Germany, assignors to Schwarzer Company, Munich, Germany

Filed Sept. 11, 1972, Ser. No. 288,209
Claims priority, application Germany, Jan. 1, 1972, 2200415
Int. Cl. G01n *1/06*
U.S. Cl. 83—16 **3 Claims**



The invention pertains to a method for the production of microtome slices, in which the slices, separated from the object, reach a liquid bath, then are removed from the latter and are prepared for further processing; further, a device for the implementation of the method, with a microtome exhibiting a stationary knife and an object slide (carrier) effecting the cutting movement.

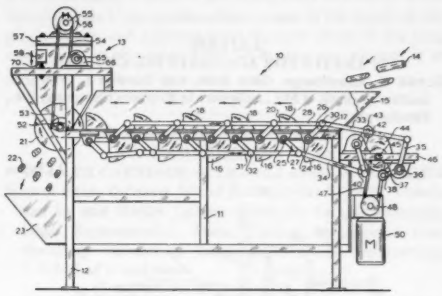
3,832,924

SHUFFLE FEEDING METHOD AND APPARATUS

Edwin Walter Mickler, P.O. Box 43, Zellwood, Fla. 32798, and Dan Bedgood, 25 E. Shirley Shores Dr., Tavares, Fla. 32778

Filed Apr. 16, 1973, Ser. No. 351,796
Int. Cl. B26d *7/00*
U.S. Cl. 83—167 **7 Claims**

A vegetable conveyor system for conveying vegetables into a rotary cutter in which a set of partially rotating plates is interspaced with a second set of partially rotating plates, each set of rotating plates being rotatable in timed sequence with the other, first in one direction and then back to its originating point, so that the partial rotation of one set of plates will shift vegetables to the second set and the second set will then shift the vegetables to the next plate of the first set, and so forth, until they are fed to the cutter. The plates are rotated back and forth by a pair of reciprocating connecting bars driven by



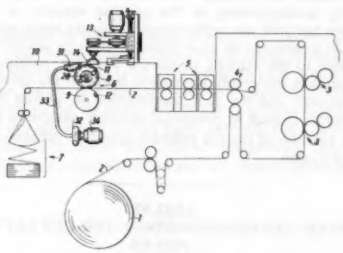
the same cam. The conveyor maintains the vegetables in a transverse horizontal position for cutting into uniform pieces by spaced rotary cutters.

3,832,925

ROTARY PRINT PRESS INCLUDING A DEVICE FOR PUNCHING ROWS OF PERFORATIONS IN CONTINUOUS PAPER WEBS

Eckhard Brandt, and Otto Staaman, both of Berlin, Germany, assignors to Firma Automatic Druckmaschinenfabrik Dr. W. Hinniger und Sohne, Berlin, Germany

Filed July 10, 1973, Ser. No. 377,898
Claims priority, application Germany, July 14, 1972, 2235511
Int. Cl. B26f *1/10*; B26d *7/12*
U.S. Cl. 83—174 **10 Claims**



The perforation punching is effected by rotary punching tools secured to driving shafts and including a first tool provided with readjustable punch pins mounted in a receiving body and a cooperating second tool provided with punch dies. The punch pins are regrindable by a grinding attachment, to tangency of their working ends with a common circle concentric with the axis of rotation of the first tool. The grinding attachment is mounted adjustably on the machine frame and permits regrinding the pins without removing the tool from its working position. The pin resetting device is mounted in the receiving body coaxial with the driving shaft of the first tool and acts simultaneously on all of the pins. The resetting device is actuable, for rotation, by an actuating means which is externally accessible. In one embodiment, the pins are of equal length and have oblique inner ends which are resiliently biased against a conical ring which can be moved axially by a gear wheel threadedly engaged with the receiving body and rotated by a pinion which, in turn, has an externally accessible drive shaft. In another embodiment, the pins are of unequal and gradually increasing length, and their inner ends engage the

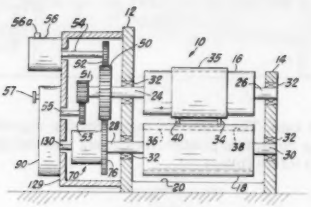
spiral periphery of a member rotatably mounted in the receiving body and having a gear hub engageable with an actuating pinion which may be rotated from the exterior of the machine.

3,832,926

APPARATUS FOR ACCURATE DIE-CUTTING

Gerald G. Leaseburge, Glen Arm, and Gordon L. Morgret, Baltimore, both of Md., assignors to Koppers Company, Inc., Pittsburgh, Pa.

Filed Oct. 29, 1973, Ser. No. 410,675
Int. Cl. B23d *25/16*; **B26d** *1/56*
U.S. Cl. 83—311 **9 Claims**



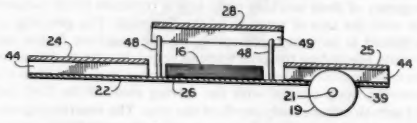
Inaccurate cuts often occur in paperboard blanks passing between a pair of cooperating die and anvil cylinders because of anvil cylinder wear, irregular blank velocity, and other factors. Such inaccuracies are reduced by driving the die cylinder at a preselected angular velocity and driving the anvil cylinder at an angular velocity proportional to the angular velocity of the die cylinder with the preselected proportion being maintained during changes in angular velocity of the die cylinder. The preferred apparatus includes a first mechanical transmission having a primary input driven by the die cylinder and a secondary input driven by a second mechanical variable-ratio transmission for driving the anvil cylinder at an angular velocity corresponding to the angular velocity of the die cylinder but with the anvil cylinder velocity being selectively variable to provide an anvil cylinder velocity selectively proportional to the velocity of the die cylinder. Additionally, a slip clutch is preferably interposed between the drive for the die cylinder and the first transmission to permit the anvil cylinder to change its rotational position relative to the rotational position of the die cylinder upon the occurence of excessive torque.

3,832,927

APPARATUS FOR FINISHING OVER-CUT PATTERN PIECES

Emmit F. Warnock, Tarrytown; Bobby Wayne Williamson; Gordon H. Ellington, and William O. Mitchell, all of Vidalia, all of Ga., assignors to Oxford Industries, Inc., Atlanta, Ga.

Filed Jan. 11, 1973, Ser. No. 322,727
Int. Cl. B26d *7/22*
U.S. Cl. 83—409 **3 Claims**



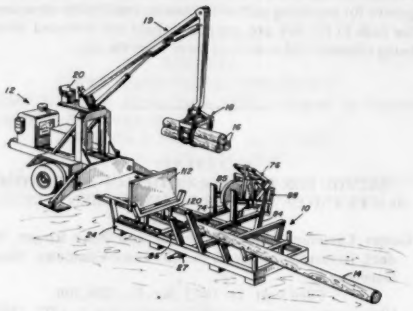
Method and apparatus for cutting small pattern pieces such as sleeve facings wherein the pattern pieces are over-cut in the cutting room, then the over-cut pattern pieces are held down and guided through pairs of rotary knives that are properly spaced to remove the excess material and provide accurately cut pattern pieces.

3,832,928

PORTABLE PULPWOOD SLASHING MACHINE

Henry W. Copeland, P.O. Box 11349, Montgomery, Ala. 36111

Filed Nov. 30, 1972, Ser. No. 310,948
Int. Cl. B27b *5/02*, *27/02*
U.S. Cl. 83—467 **12 Claims**



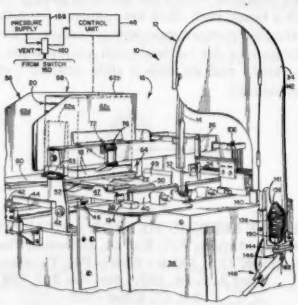
A wood slashing machine specifically intended for use with a conventional loading machine has a trailable vehicle formed by a frame and a pair of wheels mounted on the frame. Portions of the frame form a bed for restricting the movement of pulpwood, saw logs, fence posts, and the like, arranged on the bed by the loading machine. A circular saw is mounted on the frame as by a four-link mechanism actuated from the loading machine for cutting of articles arranged on the bed. The length of the articles cut off may be gauged by a stop plate adjustably mounted on the slashing machine frame. The bed is advantageously arranged so that the article being cut is spaced furthest from the frame at a point adjacent the saw so as to place the area being cut in tension and facilitate sawing.

3,832,929

SLICER HAVING AUTOMATIC MATERIALS FEED

Mario J. Pedi, 16 Wickham Rd., Winchester, Mass. 01890

Division of Ser. No. 179,464, Sept. 10, 1971, Pat. No. 3,736,829. This application Mar. 23, 1973, Ser. No. 344,178
Int. Cl. B26d *4/44*, *4/46*
U.S. Cl. 83—714 **5 Claims**



Apparatus for feeding pieces of material to a cutting tool which sequentially cuts slices from each piece of the material, stores block-like pieces of the material in a stack from which a single piece is discharged to be sliced, displaces the uncut portion of a piece to the side away from the cutting tool after completion of each slicing advance thereby to retract the uncut portion past the tool without interference, engages the

residual portion of the piece which is too thin to be again sliced to control its removal from the machine, and separates the residual piece from the last slice cut from it without damage to the slice.

3,832,930

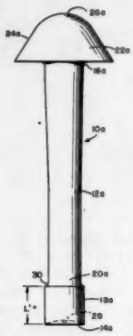
PINS FOR MINE AND TUNNEL ROOFS AND OTHER STRUCTURES

Bani Banerjee, Skillman; Sigmund Black, Belle Meade, and Mukund Gangal, Princeton, all of N.J., assignors to Lee-Norse Company, Charleroi, Pa.

Filed Apr. 16, 1973, Ser. No. 351,575

Int. Cl. A01l *7/10;* **A43b** *23/20;* **F16b** *15/00*

U.S. Cl. 85—30 **7 Claims**



Pins adapted to be driven into a structure such as a mine or tunnel roof without the necessity for the prior formation of pin receiving openings in the structure. The pins each comprise an elongated shank having a leading end for providing a pin receiving opening in the structure during the driving of the pin thereinto, the leading end being blunt to prevent deviation of the pin from a desired path during its said driving, and the shank at such leading end including an enlarged leading end portion of greater peripheral dimension than a thereafter following portion of the shank to provide an opening in the structure larger than such thereafter following shank portion.

3,832,931

DEVICE FOR FASTENING OBJECTS TO WALLS OR OTHER SUPPORTS

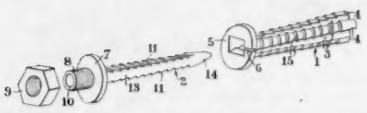
Maryan Talan, 68 Rue Bonaparte, 75 Paris, France

Filed Dec. 19, 1972, Ser. No. 316,577

Claims priority,, application France, Dec. 21, 1971, 71.45832

Int. Cl. F16b *13/06*

U.S. Cl. 85—83 **3 Claims**



Device for fastening an object to a wall or support, of the type comprising an expansible peg adapted to be inserted into a hole formed in said wall or support, and an expansion plug adapted to be driven home into said peg and formed with notches or the like for anchoring said plug in said peg. The peripheral surface of the plug of said device and the inner wall of the corresponding peg are both divided into at least two separate areas extending longitudinally thereto, namely a first area comprising a series of anchoring teeth or notches or the like distributed through the whole or part of the length of said plug and peg, and a second plain slip area which, in the plug, constitutes an expansion ramp on at least one portion of its length.

3,832,932

TRAILER CARRIAGE WITH COLLAPSIBLE WHEELS

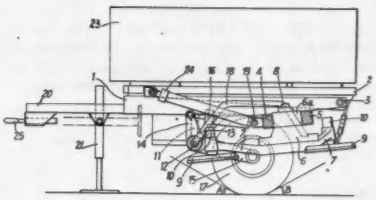
George Even, deceased, late of Boulogne-sur-Seine 92, France, and by said Maitre Jacques Mahot De La Querantonnais, Legal Representative, Paris, France, assignors to Constructions Navales et Industrielles de la Mediterranee C.N.I.M., Paris, France

Filed Mar. 20, 1972, Ser. No. 236,152

Claims priority, application France, Mar. 25, 1971, 71.10604

Int. Cl. F41f *3/04;* **B60p** *1/30*

U.S. Cl. 89—40 J **8 Claims**



A trailer the chassis of which is raised so as to allow its running over rough ground, said chassis being pivotally carried by a turret adapted to be lowered down to ground surface when the trailer is stationary and this lowering being associated with a raising of the wheels above ground as provided by jacks engaging bell cranks fitted between the chassis and the wheels. The turret feet are advantageously adjustable separately in a vertical direction and the chassis carries a tiltable frame.

3,832,933

AUXILIARY POWER STEERING DEVICE FOR VEHICLES WITH PRESSURE ACCUMULATORS

Erich Jablonsky, Bobingen/Rems, Germany, assignor to Zahnradfabrik Friedrichshafen AG, Postfach, Germany

Filed Sept. 27, 1972, Ser. No. 292,612

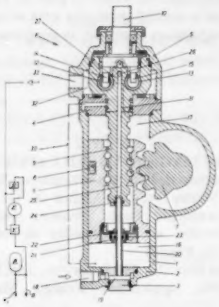
Claims priority, application Germany, Oct. 7, 1971, 2149955

Int. Cl. F15b *9/10*

U.S. Cl. 91—374 **3 Claims**

The invention effects a short path readily sealed against leakage for pressure fluid supply to double acting hydraulic booster steering mechanisms of the type utilizing a piston internally threaded for coacting with an externally threaded steering spindle which extends into the piston and which spindle controls valving for selectively pressurizing either end of the cylinder. In installations where pressure accumulators are utilized for feeding the steering system and other devices on the vehicle, e.g., brakes, leakage in the high pressure system is serious because the size of accumulators are limited by space requirements and pumps for pressurizing accumulators are small. Hence, the invention minimizes such leakage by pres-

sure feed through a tube passing into the piston from an end of the cylinder and communicating with a pressure feed bore in



the steering spindle. Since the parts are small the sealing elements for such tube are correspondingly small and the leakage thereby reduced to a minimum.

3,832,934

RESILIENT STOP FOR PISTON OR THE LIKE

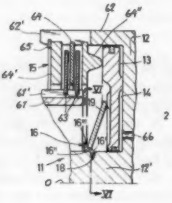
Hansjorg Dach; Karl Heinz Bordowsky, and Manfred Bucksch, all of Friedrichshafen, Germany, assignors to Z F Getriebe Gesellschaft mit beschrankter Haftung, Saarbrucken, Industriegebiet Sud, Germany

Filed May 15, 1972, Ser. No. 253,438

Claims priority, application Germany, May 14, 1971, 2124008

Int. Cl. F01b *31/00*

U.S. Cl. 92—130 **6 Claims**



A peripheral groove on a shaft or in a cylinder accommodates part of an annular abutment of generally S-shaped or W-shaped cross-section whose projecting portion forms a seat for a Belleville spring or for a bearing plate engaged by an array of coil springs. The abutment may be a single, deformable ring or a pair of complementary ring segments held together by the Belleville spring or by the bearing plate under pressure of a piston slidably mounted on the shaft or in the cylinder.

3,832,935

PISTON CYLINDER ENGINE WITH PRESSURIZED PISTON ROD SEAL

Onno Syassen, Augsburg, Germany, assignor to M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft, Augsburg, Germany

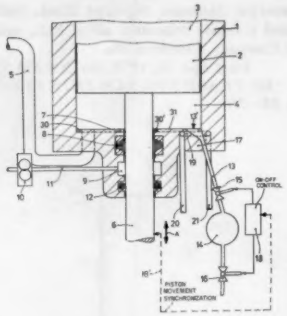
Filed Apr. 19, 1973, Ser. No. 352,711

Claims priority, application Germany, Apr. 26, 1972, 2220404

Int. Cl. F01b *31/10*; F16j *15/18*

U.S. Cl. 92—156 **14 Claims**

To seal the piston rod through an end wall of the cylinder, the piston rod is formed with a bore in which a sealing packing is located. In the wall, between the bore and outside surface of the wall, a pressure chamber is formed surrounding the piston rod into which a pressure fluid is introduced, to press the packing material against the piston rod, provide lubrication for sliding movement between the piston rod and the packing, and effect a gas-tight seal during such sliding movement. Any pressurized fluid which may leak into the cylinder is carried off by the cylinder by a drain which is periodically isolated



from the interior of the piston by a valve, to permit accumulated leakage fluid to be drained off. For a vertical piston, the drain may be located at the lowest point of a slightly inclined bottom wall surface, or to drain from a groove formed at the outside circumference of the bottom wall. The drain is preferably blocked by a sump at the time the piston reaches the lowest dead center position, to permit drainage of the sump.

3,832,936

INTEGRAL POWER STEERING GEAR

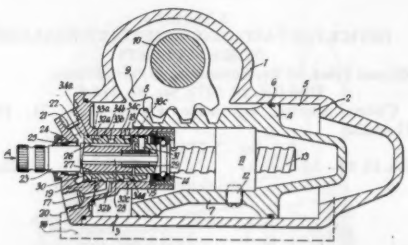
Frederick John Adams, Compton near Shefford, England, assignor to Cam Gears Limited, Hitchin, England

Filed Jan. 29, 1973, Ser. No. 327,419

Claims priority, application Great Britain, Feb. 8, 1972, 5775/72

Int. Cl. F15b *9/10*

U.S. Cl. 91—375 A **8 Claims**



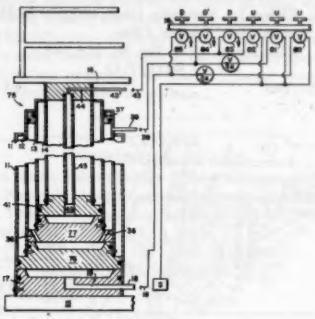
An integral power steering gear having a primary or input shaft, a secondary shaft, a valve mechanism and a power piston, all mounted on a single housing in axial alignment with one another. The power piston is movable axially relative to the valve mechanism and has a hollow formed therein which receives at least a portion of the valve mechanism depending upon the relative axial position of the power piston and the valve mechanism. The valve mechanism is located in one of the two pressure chambers located on the opposite sides of the power piston.

3,832,937

PNEUMATIC TELESCOPIC HOIST HAVING THREE OR MORE STEPS OF EXTENSION

Carlisle M. Moore, Piedmont, and Robert E. Fisher, Larkspur, both of Calif., assignors to Up-Right, Inc., Berkeley, Calif.

Filed Dec. 29, 1972, Ser. No. 319,687
Int. Cl. F15b *11/18, 13/06*
U.S. Cl. 91—167 12 Claims



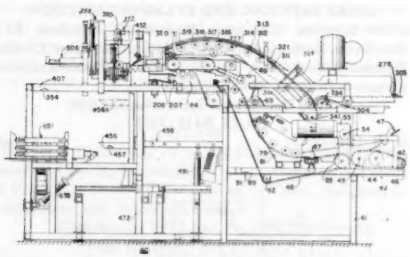
A pneumatic lift cylinder for scaffolds and having a plurality of telescopically arranged cylinder members which are extended sequentially in at least three steps of extension from the bottom up and retracted sequentially in at least three steps of retraction from the top down. In extension, after each member extends, it is overpressured, to rigidify the extended member before the next member is extended. In the retraction sequence, each of the cylinders below the retracting cylinder is maintained in an overpressured condition until its turn to retract.

3,832,938

MACHINE FOR STACKING AND BUNDLING FLAT ARTICLES

Willis J. Stapp; Norman P. Crowe, and Edwin A. Molitor, all of Miami Twsp., Clermont Cty., Ohio, assignors to Multifold International, Inc., Milford, Ohio

Filed Dec. 26, 1972, Ser. No. 318,189
Int. Cl. B65h *33/12*
U.S. Cl. 93—93 C 14 Claims



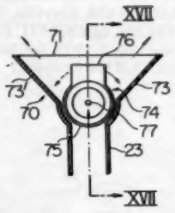
A machine for stacking and bundling flat articles. An upright stack of articles is formed on an elevator arm with the articles extending horizontally. A horizontal compressor foot is lowered to compress the stack. The stack is pushed into a generally U-shaped basket having open ends and parallel spaced sides. The basket is swung to a lay-over position in which the sides of the basket are upright to swing the stack to a position in which articles in the stack are upright. A basket clearing pusher assembly discharges the stack from the basket.

3,832,939

DEFROSTER

Jun Kakei, and Hirotsugu Yamaguchi, both of Yokohama, Japan, assignors to Nissan Motor Company, Yokohama, Japan

Division of Ser. No. 157,404, June 28, 1971, Pat. No. 3,745,906. This application Apr. 16, 1973, Ser. No. 351,648
Int. Cl. B60h *1/24*
U.S. Cl. 98—2.09 4 Claims



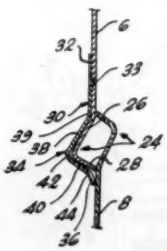
Herein disclosed is a defroster for defrosting a windshield of a motor vehicle. The defroster has a defroster nozzle having a generally rectangular, laterally elongated cross section which is gradually enlarged toward an outlet opening formed at the foremost end of the defroster nozzle. A hot fluid jet is passed to this defroster nozzle and is sprayed onto the windshield through the outlet opening. The path of the fluid jet issuing from the defroster nozzle is periodically switched from one side wall of the defroster nozzle to the other so that the fluid jet is caused to spurt at varying angles in a side-to-side direction. The flaring configuration of the defroster nozzle is useful to provide a wall-attachment effect between the fluid jet and the inner surfaces of the side walls of the defroster nozzle. The windshield is thus defrosted practically throughout its total area, providing a clear frontal viewing from within the motor vehicle.

3,832,940

LOUVER UNIT HAVING A FIRE RESISTANT SEAL

Louis R. Hess, Newport Beach, Calif., assignor to Pacific Air Products Co., Santa Ana, Calif.

Filed June 28, 1973, Ser. No. 374,318
Int. Cl. F24f *13/14*
U.S. Cl. 98—110 12 Claims



A louver unit which closes to prevent passage of smoke through air ducts, provided with a fire resistant seal that does not deteriorate at high temperatures. The louver unit includes a housing having an opening in which are mounted two blades, at least one of which is movable relative to the other between an open position and a closed position in which the blades overlap. Fixed to and extending along one of the blades is a resilient sealing strip of heat resistant material such as metal. The strip includes a median portion free to flex away from the

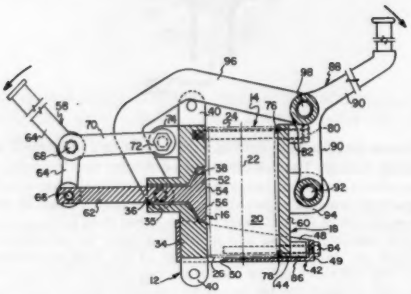
blade, which extends around the edge of the blade to which it is attached and projects beyond it towards the other blade. Closing motion brings a free lip of the sealing strip into contact with the other blade in advance of contact between the blades themselves. Further motion to the fully closed position of the blades flexes the sealing strip so that the lip is resiliently biased into sealing contact with the other blade.

3,832,941

FLATTENING METAL CANS

Bynum W. Moller, P.O. Box 688, Kerrville, Tex. 78028

Division of Ser. No. 104,266, Jan. 6, 1971, Pat. No. 3,732,804.
This application May 3, 1973, Ser. No. 356,895
Int. Cl. B30b *7/04, 9/32*
U.S. Cl. 100—137 **13 Claims**



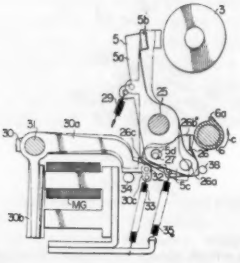
An apparatus for flattening thin metal cans is disclosed wherein the can is first creased or notched to incline the can ends with respect to the can axis and each can end is then folded about an axis adjacent the juncture of the respective can end and the can side into a generally flat configuration.

3,832,942

FLYING PARALLEL PRINTER FOR TABLE ELECTRONIC CALCULATORS

Seiji Murayoshi, Tokyo, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed Apr. 12, 1973, Ser. No. 350,364
Claims priority, application Japan, Apr. 19, 1972, 47-46883
Int. Cl. B41j *9/08*
U.S. Cl. 101—93 C **11 Claims**



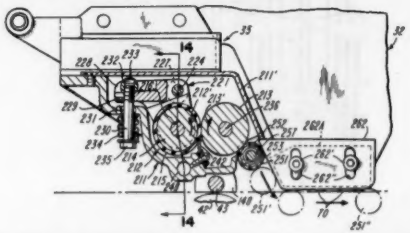
A printer comprising a plurality of type hammers each provided with a trigger lever mounted for pivotal motion thereon for a limited range of movement relative to the respective type hammer. Each type hammer has a controller associated therewith, and each controller is actuated by an electromagnet associated therewith. When any one electromagnet is energized, the controller associated therewith moves the trigger lever into the path of movement of a projecting edge of a flip shaft so that the latter may flip the trigger lever to thereby cause the trigger lever and the type hammer to move in swinging motion to effect printing of a symbol on the printing sheet.

3,832,943

PRINTING APPARATUS

Raymond L. Kirby, Jr., Vandalia, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Filed Jan. 6, 1972, Ser. No. 215,783
Int. Cl. B41j *27/12*
U.S. Cl. 101—103 **15 Claims**



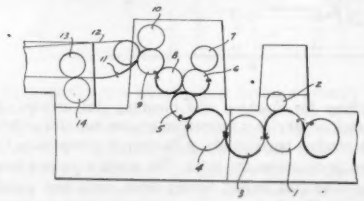
There is disclosed a printing, feeding and severing method and apparatus for carrying out the method. The apparatus includes a print head assembly and a platen assembly movable relatively toward and away from each other into and out of printing cooperation, mechanism for feeding a web of record members to between the print head assembly and the platen assembly, record severing means disposed downstream of the print head assembly and the platen assembly, and a modular support assembly of a print head of the print head assembly. In one embodiment, a first gear is connected to the movable platen assembly meshing with a second gear which drives a cam. The drive connection between the cam and the ink roll includes separate carriages carrying the ink roll. Movement of the platen assembly causes the ink roll to move sequentially between a source of ink and the print head. In another embodiment, a driven cam, mounted for movement on the movable platen assembly operates a bell crank, rods, and arms, which arms carry an ink roll for inking the print head.

3,832,944

SHEET PRINTING AND STAMPING MACHINE

Siefried Koerner, Kamenzer Strasse 42, Dresden; Erwin Schebiella, Boehmischer Weg 20, Heidenau; Peter Zirnstein, Rathmannsdorf, and Joachim Weise, Hanns-Rothbarth-Strasse 4, Dresden, all of Germany

Filed Dec. 26, 1972, Ser. No. 324,990
Int. Cl. B41f *19/02*
U.S. Cl. 101—232 **3 Claims**



During the manufacture of printed cardboard sheets, it is an advantage when the printing machine is coupled with the

stamping machine. In such a machine, in accordance with the invention, the rollers of the stamping apparatus have the same equal diameter. Since the rollers in the stamping machine may be larger than in the printing machine, the diameter of the stamping rollers is assumed to be up to 1.5 times greater than the diameter of the printing rollers of the printing apparatus, which perform one revolution in each working cycle. Since the number of revolutions of all rollers of the coupled printing and stamping machine must be the same in order to maintain the operating cycles, the peripheral speed is necessarily different. This difference in the peripheral speed, is equalized by a transfer roller which operates at two different speeds during each revolution according to the peripheral speeds of the printing rollers and stamping rollers.

3,832,945

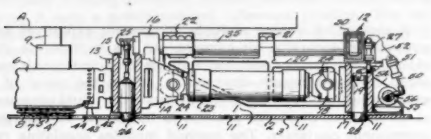
THRUSTING DEVICE

Masataro Muto, Tokyo; Shingo Nishioka, Nagasaki; Toshihiro Naka, Nagasaki; Akio Kanesaki, Nagasaki, and Kanae Tokumura, Yokohama, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 24, 1973, Ser. No. 326,479

Int. Cl. B61b *13/12*; **B66f** *1/00*

U.S. Cl. 104—154 **3 Claims**



A thrusting device comprising a plurality of fixed rail plates for shifting an article to be shifted thereon, each of said fixed rail plates being formed therein with substantially equally spaced pin holes arranged substantially along the center line thereof, and at least one thrusting unit striding over a selected one of said fixed rail plates and comprising running wheels provided at the bottom thereof for running along said fixed rail plate, one front block and one rear block arranged in opposed relation to each other, one thrusting hydraulic cylinder having one end connected to said front block and the other end to said rear block for thrusting said front block with said other end bearing against said rear block, supporting means for securing both of said blocks alternately to said fixed rail plate through said pin holes, two guide beams each having one end fixed to said front block and the central portion slidably supported by a bearing portion formed integrally with said rear block, and anti-stumbling means connected to said rear block rearwardly of said supporting means.

3,832,946

COMPUTER RESPONSIVE SUPPLEMENTAL PRINTER

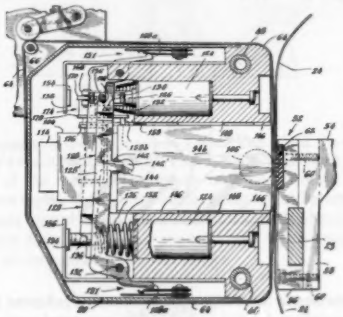
Raymond R. Lupkas, Trumbull; Gerald C. Freeman, Norwalk, and Frank T. Check, Jr., Orange, all of Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.

Filed Nov. 4, 1971, Ser. No. 195,729

Int. Cl. B41j *9/10, 23/00*

U.S. Cl. 101—93 C **1 Claim**

A supplemental printer is mounted piggy-back fashion atop a conventional high speed chain printer or other form of computer output printing equipment; and prints, upon the same print-out sheet as the high speed printer, information generated by the same electronic digital computer to which the high speed printer responds. The supplemental printer is capable of printing postage or other special indicia not easily incorporated into the print symbol repertoire of the high speed printer. In order to make the supplemental printer operate rapidly enough to be compatible with electronic data processing equipment, its print impression is divided into parts printed by individual type segments, each actuated by its own individual print solenoid. In order to improve print quality and to minimize the reaction of the piggy-back mounted printer due to the simultaneous firing of the print solenoids, the solenoids are fired sequentially by means of a time spread circuit



including a shift register and clock oscillator. Some of the segments are equipped with solenoid-actuated variable numerical print modules for the purpose of printing postage or other variable numerical information. After printing, the segments return to positions at unequal levels in order to deter "wiping off" unauthorized postage or other valuable print impressions.

3,832,947

SIMPLIFIED, SELF-INKING HAND STAMP

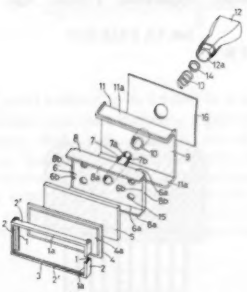
Takaji Funahashi, 1,2-chome, Kitatakasho-machi, Nishi-ku, Nagoya, Japan

Filed Oct. 19, 1971, Ser. No. 190,612

Claims priority, application Japan, Oct. 21, 1970, 45-104439

Int. Cl. B41k *1/50*

U.S. Cl. 101—327 **3 Claims**

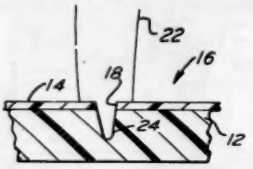


An improved stamping device including a porous stamping block adapted to remain in a retracted position above the lower edges of an outer frame as long as the device is not used, so that the block will not touch and stain an adjacent object, and be lowered to the lower edges of the outer frame, thereby permitting impression, and means for enabling continuous use of the device without use of a stamp pad.

3,832,948
RADIATION METHOD FOR MAKING A SURFACE IN RELIEF

Ronald C. Barker, Weston, Mass., assignor to Empire Newspaper Supply Corporation, Rochester, N.Y.

Continuation-in-part of Ser. No. 883,525, Dec. 9, 1969, abandoned. This application Nov. 4, 1970, Ser. No. 86,656
Int. Cl. B41c 1/02; B23k 27/00
U.S. Cl. 101—401.1 17 Claims

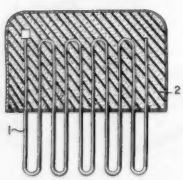


A surface in relief is formed by scanning coherent radiation over a surface defined by a thin film supported upon a plastic substrate. The wave length of the coherent radiation is chosen so that it is absorbed by the film and hence removes portions of the film exposing the substrate. The coherent radiation for removing the film may be switched on and off or otherwise modified so as to write information on the surface. Thereafter, the surface is again scanned by coherent radiation of a wave length that is reflected by the film but absorbed by the plastic substrate thereby removing portions of the plastic exposed by the coherent radiation. The film may or may not then be completely removed leaving a pattern in relief upon the surface of the substrate.

3,832,949
DEVICE FOR GENERATING SIGNALS BY EMITTING SHOCK WAVES

Jacques Claude Delgendre, Toulon; Vincent Louis Guigot, and Victor Felix Marchandise, both of La Seyne, all of France, assignors to ETAT FRANCAIS represents par le Ministre d'Etat charge de la Defense Nationale-Delegation Ministerielle pour l'Armement, Paris, France

Filed Apr. 23, 1973, Ser. No. 353,574
Claims priority, application France, Apr. 25, 1972, 72.14547
Int. Cl. F42d 3/06
U.S. Cl. 102—1 R 7 Claims



A device for generating signals constituted by successive but discrete shock waves. A continuous chain of explosive material is exploded along its length. Shock wave emitting portions of the chain are in contact with the medium of propagation while other insulated portions of the chain between the shock wave emitting portions absorb the explosions therein.

3,832,950
INVERTED BOTTLE ARMING TECHNIQUE

Gerald L. Hurst, Dallas, Tex., assignor to Kinetics International Corporation, Dallas, Tex.

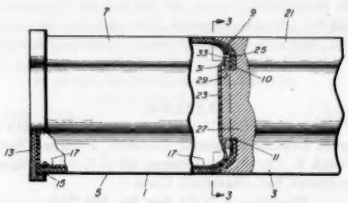
Filed Apr. 20, 1972, Ser. No. 245,721
Int. Cl. F42b 3/00; F42d 5/00
U.S. Cl. 102—24 R 13 Claims

A method of arming multiple component explosives and cooperable apparatus for carrying out the method are disclosed. A solid component containing mixing container is provided having a mouth designed to accept the spout of a cooperable liquid container and maintain the liquid container in an inverted discharge position in the mouth of the solid component container. The method includes regulating the rate of discharge from the liquid container into the mixing container by maintaining a flow retarding liquid seal at the point of discharge at the desired maximum liquid level within the solid mixing container.

3,832,951
AMMUNITION ROUND WITH NON-RIGID ATTACHMENT OF PROJECTILE TO CARTRIDGE CASE

Daniel Katz, Brooklyn, N.Y., and Peter H. Syben, Weaver, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 17, 1973, Ser. No. 324,267
Int. Cl. F42b 5/02
U.S. Cl. 102—38 6 Claims

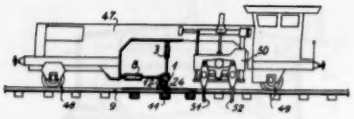


A non-rigid connection is made between a non-metallic, combustible, cylindrical cartridge case body having a centrally-apertured domed front end and a projectile or shell having a concave outer annular portion engaging the domed front end and a threaded central attachment plug extending through the case aperture, by means of a locking ring threaded onto the plug to clamp the front end against the projectile and a thin annular spring washer having its inner periphery interposed between the ring and the inner periphery of the front end and its outer periphery engaging the front end outwardly of the ring.

3,832,952
DEVICE FOR THE VERTICAL AND LATERAL DISPLACEMENT OF RAILWAY TRACK

Hans Hurni, Pres Lausanne, Switzerland, assignor to Canron, Inc., Phillipsburg, N.J.

Filed Nov. 24, 1972, Ser. No. 308,945
Claims priority, application Switzerland, Dec. 3, 1971, 17606/71
Int. Cl. E01b 33/02
U.S. Cl. 104—7 B 11 Claims



Apparatus for the vertical and lateral movement of a section of railway track. Gripping members are operated to grip the two lines of rails. The gripping members are mounted on at least one support frame connected by articulated connecting members to the chassis of a track maintenance vehicle movable on the track. The support frame is movable both vertically and laterally relative to the vehicle under the action of lifting members or lining members, to move said track section and to bring it into a predetermined reference position. The apparatus comprises in combination vertical and lateral support members connected to the support frame to guide the same and supported on at least one line of rails and guidance and control members for moving each gripping member relative to the support frame in directing both vertical and transverse to the track.

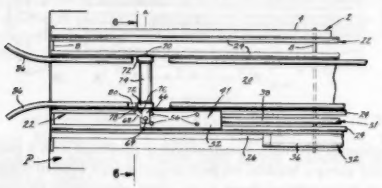
ERRATUM

For Class 104—154 see:
Patent No. 3,832,945

3,832,953
CONVEYOR FOR WHEELED VEHICLES

Albert Glenn Aaron, Chesterfield, Mo., assignor to Passpoint Corporation, Maryland Heights, Mo.

Filed Aug. 30, 1972, Ser. No. 285,072
Int. Cl. B65g 25/10
U.S. Cl. 104—162 8 Claims

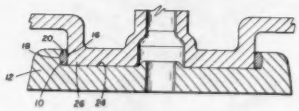


A conveyor for automatic car wash installations has a path along which the wheels of conveyed vehicles roll. A plurality of drive rollers move over the path and successively bear against the back sides of the vehicle tires so as to urge the vehicle forwardly along the path. The rollers are powered by fluid operated cylinders and during the return stroke of the reciprocal cylinder movement, the rollers move to a position along side the path so as not to interfere with the wheels on the path.

3,832,954
CENTER PLATE VERTICAL WEAR RING

Harvey Edward Amwake, West Falls, N.Y., assignor to Dresser Industires, Inc., Dallas, Tex.

Filed June 27, 1973, Ser. No. 374,193
Int. Cl. B61f 5/16; F16c 17/04, 41/00
U.S. Cl. 105—199 C 4 Claims

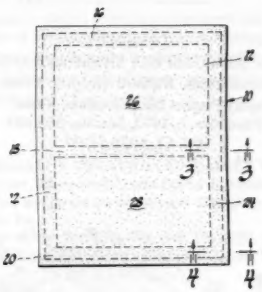


The present invention involves a wear ring which fits in the recess of a truck bolster center plate to protect the inner annular wall of the recess. The annular wall has a double taper which first tapers outward a distance from top to bottom and then tapers inward a part of the distance. The ring has a double tapered outer surface from top to bottom which is complementary to the interior wall of the recess.

3,832,955
REINFORCED PLASTIC PANEL

Arthur D. Pottinger, Bloomfield Hills; William V. Ryder, Jr., St. Clair Shores, and Lyle H. Shuert, Madison Heights, all of Mich., assignors to Jered Products, Inc., Troy, Mich.

Filed Sept. 1, 1972, Ser. No. 285,807
Int. Cl. B65d 19/18
U.S. Cl. 108—51 8 Claims



A plastic panel adapted to be formed by a vacuum forming or other molding processes including a pair of plastic sheets fused together with high strength inserts encapsulated therebetween, the inserts defining reinforing ribs of substantial bending modulus, or a pattern for forming a stiffening configuration or reinforcement in the fused sheets, and means for establishing compliance between the reinforcements and the plastic sheet material during cooling following the forming operation.

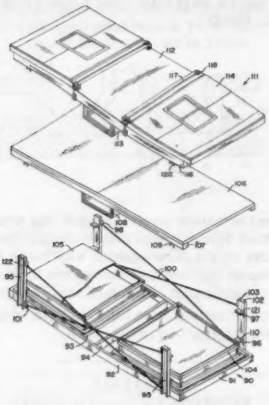
3,832,956
RELOCATABLE BUILDING MODULE AND SHIPPING CRATE

Ernest M. Briel, Jr., 235 Debra Ct., Satellite Beach, Fla. 32931

Division of Ser. No. 150,420, June 7, 1971. This application June 22, 1973, Ser. No. 372,484
Int. Cl. B65d 19/12
U.S. Cl. 108—55 5 Claims

A relocatable building module apparatus and shipping crate for shipping a disassembled module. A folded module can be

placed in position on location and walls erected in their upright position relative to the floor by rotating the walls on



hinged points on the floor and locking them in place. A roof can then be attached to the walls and several modules can be aligned together in a positive alignment.

3,832,957

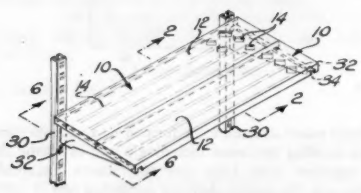
INTERLOCKING DISPLAY SHELF ARRANGEMENT

Walter M. Mendenhall, Bedford Heights, Ohio, assignor to Modern Display Plastics Inc., Cleveland, Ohio

Filed Nov. 3, 1972, Ser. No. 303,603

Int. Cl. A47b *57/00*

U.S. Cl. 108—64 **6 Claims**



An interlocking display shelf comprising a quadrangular shelf member having a generally smooth perforate planar upper surface with a flange depending from the upper surface and forming a skirt around the shelf member. The male portion of a keyhole fastener is carried by the flange along one side of the shelf member and the female portion of the keyhole fastener is formed in the flange extending along an opposed side of the shelf member whereby a plurality of shelf members may be interlocked side to side to form a display shelf of any desired width. Each of the shelf members further includes bracket receiving channels along opposite edges thereof with the channels serving to locate and retain the shelf member on shelf supporting brackets.

3,832,958

BUILDING FOR EXPLOSIVE DANGEROUS MATERIALS

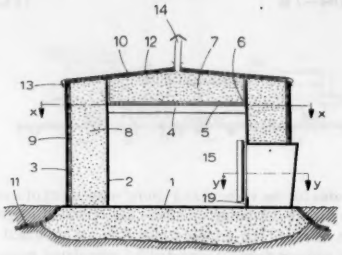
Hans Hiorth, Lierbyen, Norway, assignor to Dyno Industrier A.S., Oslo, Norway

Filed Feb. 13, 1973, Ser. No. 332,164

Claims priority, application Norway, Feb. 17, 1972, 476/72

Int. Cl. E05g *3/00*; **E04b** *1/32*

U.S. Cl. 109—1 R **15 Claims**



The invention relates to a new construction for a confined space such as a building for containing dangerous explosive material, for instance a building adapted to be used in connection with the production, handling and/or storing of explosives, ammunition or other explosive goods. The walls of the building comprises an internal and an external cylindrical shell construction with upwardly open cylindrical shells, the spacing therebetween being filled with sand. The shells are attached to a circular floor- or bottom plate. The roof construction of the building comprises a web structure anchored to the internal cylindrical shell and on top of which web structure is positioned a cover which preferably should be of resolved or defibrated material. On top of the cover is positioned a layer of sand, and finally a roof covering on top of the sand layer.

3,832,959

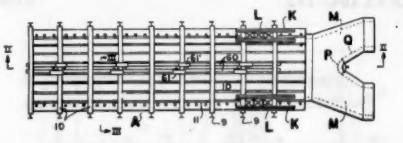
SUSPENDED ROOF AND END WALL CONSTRUCTION FOR REVERBERATORY FURNACE

Levi S. Longenecker, 61 Mayfair Dr., Pittsburgh, Pa.

Filed Sept. 21, 1971, Ser. No. 182,409

Int. Cl. F23m *5/06*

U.S. Cl. 110—99 R **19 Claims**

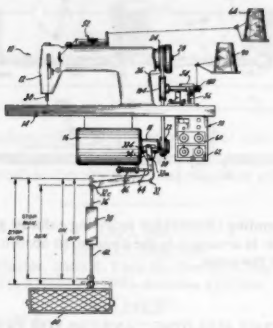


A refractory furnace construction is provided with a panelized roof using a hooked-on post or gooseneck type of suspension, as distinguished from a so-called piggy-back or cantilevered type. Each roof panel comprises a group of refractory tile members and their hanger castings constructed for unitized mounting within the roof construction. In addition to supporting metal structural framework, a cover assembly is provided to enable cleaning the upper surfaces of and, if desired, to provide a continuous cooling of the upper reaches of the refractory tile members of the roof. Refractory side wall parts converge towards each other and cooperate with a nose part to enclose an uptake end of the furnace. The nose part is constructed for unitized removal and insertion with respect to the side wall parts.

3,832,960
NEEDLE THREAD MONITOR TO AVOID RUNOUT OF BOBBIN THREAD

Nathan Mayer, 27 Messler St., East Brunswick, N.J. 08816, and Anthony P. Sorrentino, 745 Woodlawn Ave., Hammonton, N.J. 08037

Filed May 11, 1973, Ser. No. 359,467
Int. Cl. D05b *69/36*
U.S. Cl. 112—219 R **12 Claims**



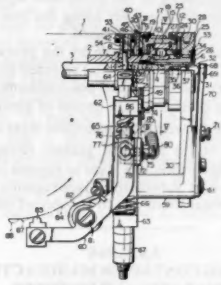
An attachment for any type of lock stitch sewing machine for monitoring the amount of needle thread used by the stitching mechanism of the sewing machine so as to avoid the run out of bobbin thread from a bobbin having a known supply of bobbin thread while a workpiece is being sewn. For repetitive type of sewing, a relationship is determined between the consumption of needle thread and the consumption of bobbin thread which is required to complete a workpiece. Based on this relationship, a bobbin winding device including a counting wheel and a bobbin thread counter is provided for winding a bobbin to its maximum capacity with a known supply of bobbin thread. Also based on this relationship, a needle thread monitor including a needle thread counter and counting wheel are provided and the needle thread counter is set to terminate operation of the stitching mechanism just prior to the runout of the known supply of bobbin thread which has been wound on the bobbin. The operator is thereby warned that there is only enough bobbin thread remaining to override the automatic termination of the stitching mechanism and finish the workpiece being sewn. During operation of the sewing machine, the bobbin winding device winds the next bobbin to be used with the same amount of bobbin thread so that it may replace the depleted bobbin and be used to complete the same amount of workpieces.

3,832,961
SEWING MACHINE DRIVE CONTROL DEVICE

Sirozi Nakamura, and Takashi Thukioka, both of Tokyo, Japan, assignors to Tokyo Juki Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed July 2, 1973, Ser. No. 375,476
Int. Cl. D05b *69/02*
U.S. Cl. 112—220 **3 Claims**

A sewing machine drive control device includes drive means, a prime mover shaft drivingly connected to the drive means to be driven thereby, a main shaft drivingly connected to the prime mover shaft to be driven thereby, a hollow cylindrical support member secured to the main shaft, an epicyclically movable unit receiving the prime mover shaft for rolling and sliding movement therein, a rotary member rotatably supported on the support member, a braking mechanism movable for contacting and separating from the rotary member, a clutch mechanism for drivingly connecting and disconnecting between the prime mover shaft and main shaft and control



means for selectively controlling the braking mechanism and clutch mechanism so as to allow the epicyclically movable unit to only revolve and rotate and only rotate.

3,832,962
PRECOATING OF ALUMINUM CAN SHEET

Rolf Rolles, New Kensington, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

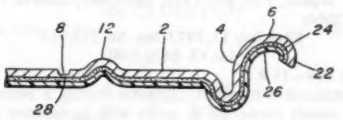
Continuation-in-part of Ser. No. 174,136, Aug. 23, 1971, abandoned, and a continuation of Ser. No. 805,829, March 10, 1969, abandoned. This application July 30, 1973, Ser. No. 384,039
Int. Cl. B21d *22/28*
U.S. Cl. 113—120 A **6 Claims**

The successive steps of coating aluminum can sheet with a resin capable of withstanding subsequent drawing and ironing, curing the resin coated on the sheet; drawing the sheet, for example, into the shape of a shallow can, and ironing the shallow can into a deep can of beverage size.

3,832,963
THERMALLY TREATED CONTAINER WALL

Herbert Gayner, Monroeville, and David A. Smith, Penn Hills, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Division of Ser. No. 190,480, Oct. 19, 1971, Pat. No. 3,762,598. This application Oct. 11, 1972, Ser. No. 296,605
Int. Cl. B21d *51/26*
U.S. Cl. 113—121 C **3 Claims**

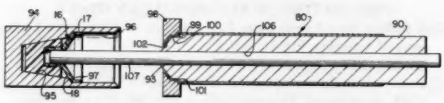


A method of fabricating a container wall having an integral opening device by providing a metal sheet having an adhesive material secured to one surface thereof. The adhesive secures a continuous protective layer to the metal sheet. The protective layer is selected from the group consisting of partially crystalline polyolefin, partially crystalline polyolefin-ethylene copolymers, polyethylene acrylate and ionomers of polyolefin. Scoring the sheet to define a removable sector therein while preventing fracture of the adhesively secured protective layer. Subsequently heating the composite metal sheet to a temperature of about 275° to 375°F for a period of about 0.2 second to 4 minutes and preferably about 300° to 350°F for about 0.5 to 3 minutes. The protective layer is stress relieved by this thermal treatment which substantially completely eliminates

microvoids established in the protective layer during the scoring operation. Effecting the heating operation in such a fashion as to improve adhesive bonding of the protective layer, resist diaphragming of the protective layer and reduce feathering of the protective layer along the line of severance when the removable sector is fractured.

A container wall structure made by the process of this invention including the adhesive being selected from the group consisting of epoxy, polyester and polyurethane. The protective layer having a crystallinity in excess of about 50 percent. The adhesive bond between the protective layer and the metal sheet removable sector being of greater strength than the shear strength of the protective layer in regions underlying the score line to prevent substantial diaphragming and to limit feathering to less than about one thirty-second inch.

3,832,964
DISPENSING CONTAINER MANUFACTURING APPARATUS AND METHODS
Winston G. Rockefeller, Woodcliffe Lake, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.
Filed Nov. 24, 1972, Ser. No. 308,999
Int. Cl. B21d *51/36*
U.S. Cl. 113—1 B **15 Claims**



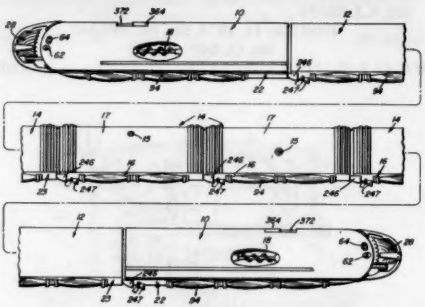
Collapsible toothpaste and like dispensing containers having flexible body walls and externally threaded discharge necks are formed by wrapping a sheet of flexible material about a mandrel and fastening overlapping side edges together to provide a tubular body shell having a longitudinal seam, and then inserting and clamping one end of the formed body shell between nested mechanically interengaged inner and outer head structure elements.

ERRATUM

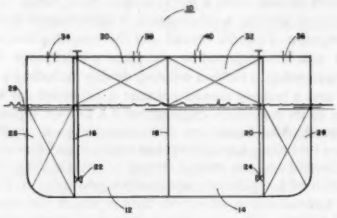
For Class 114—0.5 see:
Patent No. 3,833,035

3,832,965
SUBMERSIBLE TRANSPORT APPARATUS
Paul J. Walker, P.O. Box 1212, Edmonton, Alberta, Canada (T5J2M4)
Filed July 17, 1973, Ser. No. 379,958
Int. Cl. B63g *8/00*
U.S. Cl. 114—16 R **17 Claims**

A submersible transport apparatus having a plurality of tanker vessels connected in series with locomotive tugs at either end to form an articulated train. Each tanker vessel is formed by a tank and chassis connected together in such a manner that the tank may rotate about an axis passing through itself while the chassis maintains a fixed relationship with respect to the tank. A double ball-and-socket assembly arranged in a spherical housing is provided for connecting the train units together. Swivel flexing tables arrange adjacent chassis in an articulated manner for protecting hoses, cables, and couplings passing between the chassis during maneuvering of the apparatus. Each table has a swiveling cover apron associated with it for streamlining the train. Hydrofoils are pivotally mounted to the chassis to control the depth and angle of attack of the vessels. Each locomotive has a hull provided with an extendable and retractable conning tower provided with a cutterhead for selectively cutting holes in ice, and the like. A sliding cover selectively opens and closes an opening in the hull for permitting passage of portions of the conning tower, including the cutterhead, to positions extending from the hull. The tug hull is also provided with a longitudinally extending channel for receiving exhaust gases and felt, and the like, is arranged in the channel to absorb smoke-laden moisture in the gases.



3,832,966
METHOD OF BUILDING TANKERS FOR PREVENTING OIL SPILLS IN CASE OF WRECK
Emilio C. Garcia, 441 Gravier St., New Orleans, La. 70130
Filed July 26, 1973, Ser. No. 382,991
Int. Cl. B63b *25/08*
U.S. Cl. 114—74 R **3 Claims**

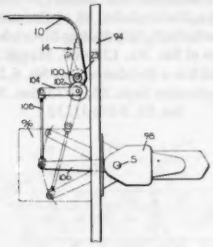


Building a tanker with double sides defining side tanks extending from a top deck to hull bottom and adjacent to and associated with cargo tanks. Making the side tanks from hull bottom to waterline equal in volume to respective volumes of associated cargo tanks above said waterline. Opening valves between respective side tanks and cargo tanks ruptured in a wreck and draining off into side tanks all oil above waterline in said ruptured cargo tanks faster than said oil can drain into sea by placing larger vents in the side tanks than in cargo tanks.

3,832,967
IMPROVED STEERING SYSTEM
Donald W. Waner, Stow, and Roger F. Olson, Cuyahoga Falls, both of Ohio, assignors to Rockwell International Corporation, Pittsburgh, Pa.
Division of Ser. No. 199,548, Nov. 17, 1971, Pat. No. 3,747,428. This application Feb. 21, 1973, Ser. No. 334,321
Int. Cl. B63h *25/10*
U.S. Cl. 114—144 R **1 Claim**

An improved steering system for use with a marine propulsion unit comprising a steering force shaft, a steering force transmission cable in driving connection with the shaft, a tiller arm attached to a propulsion unit pivotally mounted to a

transom, and a gear reduction arrangement operatively connecting the tiller arm to the transmission cable and adapted to

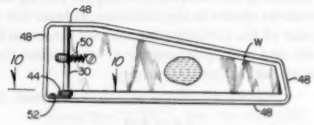


vary the application of torque to the tiller arm between a minimum torque and a maximum torque in response to movement of the shaft to thereby pivot the propulsion unit.

3,832,968
VEHICLE SIGNAL

Clifford W. Martin, 2666 S. York St., Denver, Colo. 80210

Filed Nov. 28, 1973, Ser. No. 419,666
Int. Cl. B60q
U.S. Cl. 116—28 R **16 Claims**



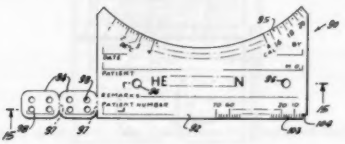
Signal for use on a leading vehicle, indicating to the driver of a trailing vehicle, that the leading vehicle is traveling at or above a predetermined non-hazardous speed or is traveling at a lower hazardous speed or has stopped. It is characterized by a pivoted vane, movable to non-hazardous indicating position by aerodynamic forces, and movable to hazardous indicating position by an opposing spring. The rate at which the viewed area of the vane changes is a measure of the rate of change, or deceleration, of the leading vehicle, thus extending the critical reaction time of a following driver.

3,832,969
BLOOD TEST SYSTEM

Edward J. Rapoza, Butler; Maxwell E. Siegel, Sussex, both of N.J.; Weems E. Estelle, Southport, Conn.; Pasquale M. Petrucci, Orange, Conn.; Joseph S. Linarducci, Wilton, Conn.; John Hamma, Milford, Conn., and John Montgomery, Trumbull, Conn., assignors to Becton, Dickinson and Company, East Rutherford, N.J.

Division of Ser. No. 15,469, March 2, 1970, Pat. No. 3,706,499. This application Aug. 18, 1972, Ser. No. 281,915
Int. Cl. G01d *21/00*
U.S. Cl. 116—114 R **2 Claims**

A blood testing system which includes a colorimeter for observing the light transmission characteristics of a reacted blood sample to determine the concentration of a particular component. The colorimeter includes a lamp, a sample holding well, a photocell, and a meter having a needle to indicate the output of the photocell. A removable module is provided which is adapted to plug into the circuitry of the instrument and adjustably calibrate the instrument for a particular blood determination. The module includes a printed scale which is designed to be positioned immediately adjacent the meter needle when the module is operatively connected to the colorimeter, the units of the scale being correlated to the particular blood determination of the module such that the scale reads directly in the units of the test being conducted. By employing a number of modules, each being color-coded and calibrated for a a particular blood determination, the colorimeter may be easily adapted to perform a number of tests by merely inserting the appropriate module. A carousel is provided for mounting several modules in the instrument, the carousel being rotatable to sequentially translate individual modules to the operative position adjacent the output needle of the meter. A number of filters are provided for the colorimeter, and a mechanism is incorporated which is designed to selectively position individual filters in the light path of the colorimeter. A patient record card is provided which is adapted to overlie and be temporarily affixed to the module. The card, which may also be color-coded, includes a

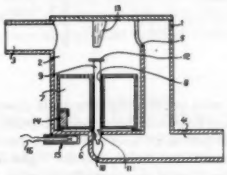


scale which overlies the scale of the module, this scale being adapted to be marked to serve as a permanent record of the test determination. A removable tear-off tab is associated with the card which may be utilized to identify a blood sample by patient number and test. A number of marked cards, obtained over a period of time for a particular test, is adapted to be placed in overlapping relationship whereby the test results will be displayed as a graph plotted against time. A folder is provided to retain the cards in such overlaping relationship, the folder having a clear plastic overlay with indicia thereon to indicate the normal range of the test results. The cuvette containing the reagent required for the blood determination is provided with a molded plastic cap which is designed to retain a capillary within the cuvette when the cap is attached. For this purpose, the cap includes an integral depending flap having an aperture therethrough, the aperture being designed to threadedly receive the capillary.

3,832,970
FLOW INDICATOR

Rutger Einar Viktor Nilsson, Sodertalije, Sweden, assignor to Alfa-Laval AB, Tumba, Sweden

Filed Nov. 27, 1972, Ser. No. 309,725
Claims priority, application Sweden, Dec. 3, 1971, 15533/71; May 12, 1972, 6305/72
Int. Cl. G01f *15/00*
U.S. Cl. 116—117 R **6 Claims**



During a small liquid flow to the indicator chamber, the liquid level therein is low due to a bottom outlet having capacity for only the small flow; and when a large flow to the chamber causes the liquid to rise to a high level, liquid also discharges through an outlet of large capacity. A device is provided to indicate which of the two levels prevails in the

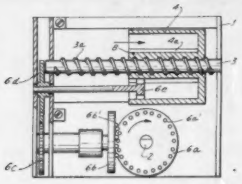
chamber; and means are also provided for increasing the through-flow area of the bottom outlet in response to the large liquid flow to the chamber, thereby allowing discharge of accumulated particles which could not pass through this outlet during the small liquid flow.

3,832,971

CHANNEL NUMBER DISPLAY DEVICE

Hiroshi Yanagawa, Kakuda, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed July 23, 1973, Ser. No. 381,988
Claims priority, application Japan, Aug. 8, 1972, 47-92967
Int. Cl. H03j 1/02
U.S. Cl. 116—124.1 **2 Claims**



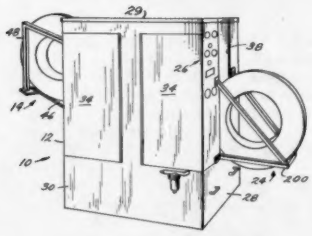
A channel number display device for use in a television tuner or the like includes a cylindrical display drum having printed on the periphery thereof a series of helically arranged channel numbers, means operably connected to the channel selector shaft of the tuner for rotating and axially displacing the drum in response to the rotation of the selector shaft such that the appropriate number is visible through a display window located in front of the display drum.

3,832,972

TIRE TRIMMING AND PAINTING DEVICE

Hubert Julian Pace, 8th & State St., Bowling Green, Ky. 42101

Filed July 30, 1971, Ser. No. 167,785
Int. Cl. B05c 5/00
U.S. Cl. 118—2 **17 Claims**



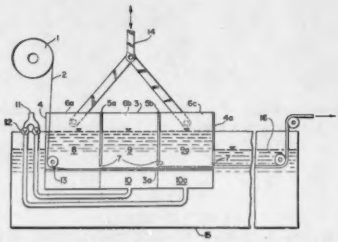
A vehicle tire with protruding nibs rolls down a ramp and into the device and begins to be rotated thereby. Knife means facing into the direction of rotation of the tire are skimmed over the left sidewall, the tread, and the right sidewall of the rotating tire at least once to trim off the nibs. Then paint is preferably sprayed upon the tire sidewalls, whereupon the processed tire is ejected from the device by application of brake means, preferably in combination with bumping the tire being ejected from the rear with another tire entering the device for processing. Cycling of the device may be automatically controlled. In the spray-painting operation, black paint may be applied to one sidewall as white wall protector is applied to the other.

3,832,973

APPARATUS FOR THE PRODUCTION OF A MULTI-LAYER SHEET MATERIAL OF MICROPOROUS STRUCTURE

Dieter Beissel, Wiesbaden; Peter Dinter, Wiesbaden-Biebrich, and Klaus Andra, Eschenhahn, all of Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

Continuation of Ser. No. 135,460, March 22, 1971, abandoned, which is a division of Ser. No. 6,214, Jan. 27, 1970. This application Sept. 25, 1973, Ser. No. 400,501
Int. Cl. B05c 3/132
U.S. Cl. 118—50 **4 Claims**



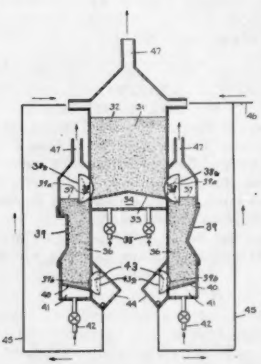
This invention relates to an apparatus for use in the production of multi-layer sheet material which comprises a reservoir, container means in the reservoir, means for raising and lowering the container means in the reservoir, at least one partition in the interior of the container means, slot means in the partition and one end wall of the container, and means for passing a web through said slot means.

3,832,974

FLUIDIZED BED COATING APPARATUS

Gerald E. Adams, Mishawaka; Robert O. Borton; Alfred J. Dabrowski, Jr., both of South Bend; Vernon A. Falkenau, and James H. Flood, both of Mishawaka, all of Ind., assignors to Uniroyal, Inc., New York, N.Y.

Filed Apr. 25, 1972, Ser. No. 247,500
Int. Cl. B05b 7/12, 7/14; B05b 7/24
U.S. Cl. 118—408 **4 Claims**



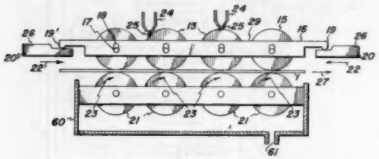
Apparatus and method for effecting fluidized bed coating of a surface of an article, such as a mold for an auto mat, wherein an outside wall of a fluidized bed chamber containing a fluidized bed of powdered thermoplastic coating material has an opening into which the article is inserted thereby sealing the opening.

3,832,975

ELECTRO-PHOTOGRAPHIC APPARATUS

Osamu Fukushima; Masamichi Sato, and Seiji Matsumoto, all of Asaka, Japan, assignors to Rank Xerox, Ltd., London, England, by said Fukushima and Matsumoto

Filed Mar. 13, 1972, Ser. No. 234,285
Int. Cl. G03g *13/00*
U.S. Cl. 118—637 4 Claims



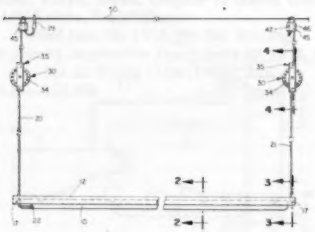
In the development of electrostatic latent images with liquid electrophoretic developer utilizing a development electrode, the spacing between the electrode and the latent image is made selectively adjustable, to control the degree of background fog occassioned by the electrode effect and the extent of edge phenomenon present in the print.

3,832,976

COW TRAINER

Paul M. Sands, R.D. 2, Coatesville, Pa. 19320

Filed Nov. 8, 1973, Ser. No. 414,160
Int. Cl. A01k *29/00*
U.S. Cl. 119—27 2 Claims



A corrosion-resistant height-adjustable electrical contact shock device for use in cow stalls, or other animal stalls, is so insulated and designed that the height adjustment may be made without disconnecting the electrical circuit and without exposing the attendant to the hazard of electrical shock.

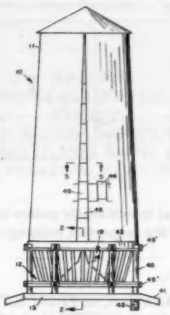
3,832,977

FEEDING DEVICE

Lyle H. Ladewig; Elmer E. Ladewig, and Lester G. Ladewig, all of R.R. No. 1, Stockton, Minn. 55988

Filed May 5, 1972, Ser. No. 250,523
Int. Cl. A01k *5/00*
U.S. Cl. 119—52 R 7 Claims

An animal feeding device having a wall which tapers outwardly as it progresses downwardly to allow feed to move down with no restriction and provided with in inwardly directed gridwork toward the bottom with an opening therein



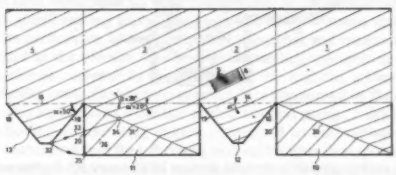
to permit animals to take feed from the inside of the feeding device.

3,832,978

TUBING FOR A COMBUSTION CHAMBER

Alfred Brunner, Winterthur, Switzerland, assignor to Sulzer Brothers Ltd., Winterthur, Switzerland

Filed Mar. 22, 1973, Ser. No. 344,053
Claims priority, application Switzerland, Mar. 17, 1972, 4012/72
Int. Cl. F22b *37/20*
U.S. Cl. 122—6 A 4 Claims



The tubing is formed with a developed surface so that the number of tubes passing out of the side edges of the rectangular surfaces of the funnel-shaped bottom is equal to the number of tubes passing out of the adjacent side edges of the trapezoidal surfaces. The angle of the tubes at entry into the four surfaces of the funnel-shaped bottom can also be the same as the tube angle in the vertical walls of the combustion chamber.

3,832,979

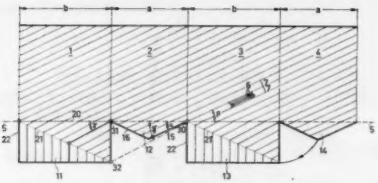
TUBING FOR A COMBUSTION CHAMBER

Heinz Ammann, Winterthur, Switzerland, assignor to Sulzer Brothers Ltd., Winterthur, Switzerland

Filed Mar. 26, 1973, Ser. No. 344,582
Claims priority, application Switzerland, Mar. 30, 1972, 4783/72
Int. Cl. F22b *37/20*
U.S. Cl. 122—6 A 3 Claims

The tubing is formed with a developed surface in which the tubes in the triangular sections are all parallel to one of the two equal sceles at an angle α and all extend into the tubes of an adjacent rectangular surface via 90° bends. The tubes in the

rectangular surfaces extend from the combustion chamber walls and the triangular surfaces at an angle $\gamma = \text{arc ctg } (2 \cos\alpha)$ and are bent at intermediate points to extend uniformly to the lower edge of the respective rectangular surface.



3,832,980

COMBINED HYDRAULIC SPEED-CHANGE, COOLING AND LUBRICATING SYSTEM IN ROTARY ENGINE

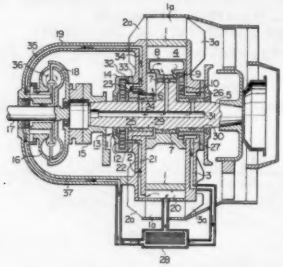
Tetsuzo Fujikawa; Masahisa Kawano, and Masaru Yamamoto, all of Akashi, Japan, assignors to Kawasaki Jyukogyo Kabushiki Kaisha, Hyogo-ken, Japan

Filed May 24, 1973, Ser. No. 363,739

Claims priority, application Japan, May 27, 1972, 47-52870

Int. Cl. F02b *53/14*

U.S. Cl. 123—8.01 **3 Claims**



A multipurpose hydraulic system in a rotary IC engine with a hydraulic speed-change mechanism coupled thereto is provide with a common oil pump driven by the engine to pump common oil to the speed-change mechanism to operate the same, to the rotor of the engine to cool the same, and to the engine bearings to lubricate and cool the same.

3,832,981

FUEL INJECTION CONTROL SYSTEM

Hisato Wakamatsu, Kariya, and Kunio Endo, Anjo, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Japan

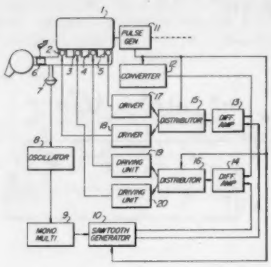
Continuation-in-part of Ser. No. 846,699, Aug. 1, 1969, abandoned. This application Aug. 24, 1971, Ser. No. 174,433

Claims priority, application Japan, Aug. 7, 1968, 43-55916; Sept. 10, 1968, 43-65038

Int. Cl. F02m *51/00*

U.S. Cl. 123—32 EA **16 Claims**

A fuel injection control system for controlling the timing and duration of an electrical driving pulse to electromagnetic fuel injection valves thereby controlling the timing and duration of fuel injected into combustion chambers of an engine. The control system utilizes a differential circuit to compare an electrical signal representing one engine parameter such as engine rpm with a synchronous sawtooth signal having a slope representing another engine parameter such as back pressure or to compare a first signal level with a sawtooth signal where at least one of the first signal level or the sawtooth slope is related to an engine operating parameter and to thereby generate the required driving pulses. Since the timing and duration of the driving pulses are determined entirely by comparison of electrical analogs of instantaneous engine parameters, the pulse duration is not critically dependent upon electrical circuit parameters such as RC time constants which often vary with age and/or environment.



3,832,982

COOLANT LOSS OR COOLANT PUMP MALFUNCTION DETECTION SYSTEM FOR INTERNAL COMBUSTION ENGINES

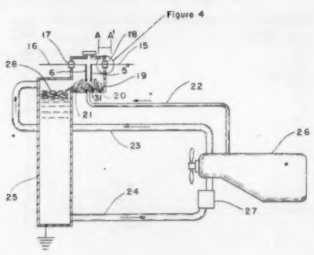
Helmut Guehr, Ruthdale, W. Va. 25304

Filed Sept. 10, 1973, Ser. No. 395,740

Int. Cl. F01p *5/14, 11/14*

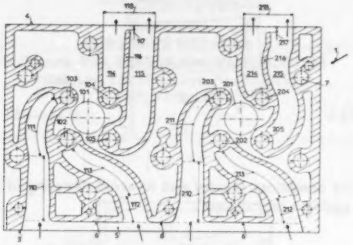
U.S. Cl. 123—41.15 **8 Claims**

Figure 4



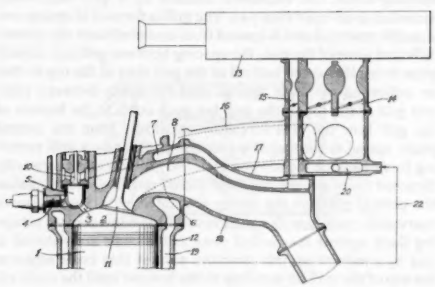
A detection system for indicating coolant loss or coolant pump malfunction in a liquid cooled internal combustion engine has been designed which consists of an auxiliary tank in communication with the radiator of the engine such auxiliary tank having enclosed within it an overflow cup designed to direct coolant flow over two condition-sensing devices or probes. In normal engine operation, coolant, which is electrically conductive, flows over the probes and an electrical current is maintained between the two probes. Circuity attached to these probes indicate this to be a normal condition. When no coolant flows across the probes, either because of coolant loss or pump malfunction, another circuit is activated which switches on a warning light located on the dash of the motor vehicle indicating lack of coolant flow.

3,832,983
CYLINDER HEAD FOR AN INTERNAL COMBUSTION ENGINE
Jean Nickly, 2 rue Le Royer, Lyon 3 (Rhone), France
Filed Feb. 16, 1972, Ser. No. 226,720
Int. Cl. F02m *35/10*
U.S. Cl. 123—75 B **1 Claim**



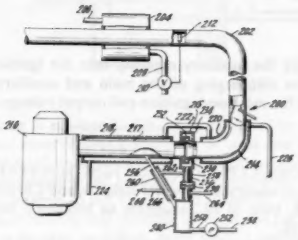
A cylinder head for an internal combustion engine, adapted to fit two or more adjacent cylinders, is provided with, for each cylinder, two spaced apart inlet valves and outlet valves grouped around a central injector. The inlets extend from a first side face of the head, which is provided with a common depression, while the outlets open onto a second side face opposite the first side face. Each of the inlets is provided with a specific configuration such that the flow of gases about each inlet valve is substantially equal. The outlets have a common partition which terminates short of the second side face such that they merge into a single outlet proximate the second side face. Further, the present invention contemplates analogously configured adjacent cylinders.

3,832,984
INTAKE AND EXHAUST MANIFOLD DEVICE OF AN INTERNAL COMBUSTION ENGINE
Fiji Taguchi, Tokyo, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed June 22, 1973, Ser. No. 372,765
Claims priority, application Japan, June 28, 1972, 47-64669
Int. Cl. F02m *31/00*; F02b *75/02*
U.S. Cl. 123—122 AB **2 Claims**



A manifold arrangement for a reciprocating, internal combustion engine of the type having an auxiliary combustion chamber associated with each main combustion chamber. The manifold arrangement includes one system for delivering a rich air-fuel mixture to each auxiliary combustion chamber, a second system for conducting a lean air-fuel mixture to each main combustion chamber and a third system for exhausting each main combustion chamber. The intake system associated with each auxiliary combustion chamber is in thermal communication with the exhaust manifold system for rapid heating of the rich air-fuel mixture. The intake associated with each main combustion chamber is in thermal communication with the coolant system of the engine for insuring good vaporization of the incoming mixture.

3,832,985
NON-POLLUTION CARBURETION SYSTEM FOR ENGINES
Robert C. Edde, P.O. Box 3294, Beirut, Lebanon
Filed June 11, 1971, Ser. No. 148,201
Int. Cl. F02m *29/00, 31/00*; F02p *5/04*
U.S. Cl. 123—141 **45 Claims**

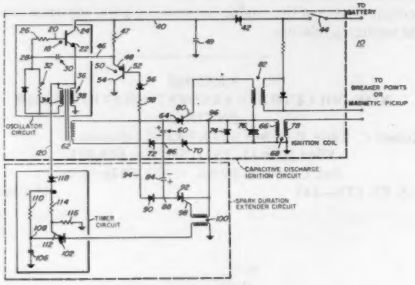


A fuel and ignition control system for an internal combustion engine for decreasing engine fuel consumption and for decreasing carbon monoxide and unburned hydrocarbon exhaust emissions which includes a carburetor, a pressurized fuel tank vented, when over-pressurized, to the carburetor, a high speed venturi and at least one idle and low speed venturi in the carburetor, a throttle in the carburetor and means connected to the throttle for vacuum controlling the igniting distributor in response to the position of the throttle, a thermostatically controlled heated air inlet duct connected to the carburetor and heated from the engine coolant pump, a dry proportioning accelerating system connected to said carburetor for increasing fuel flow through said carburetor in response to the rate of engine intake manifold pressure rise, an engine coolant heated fuel evaporator connected to the air-fuel outlet of the carburetor, a liquid fuel interceptor and recuperator connected at one end to the fuel evaporator and connected at its opposite end to the intake manifold, means for drawing liquid fuel from the interceptor and recuperator and for evaporating at least a portion of the liquid fuel and returning such vapor to the intake manifold and means for heating the intake manifold with engine coolant.

3,832,986
CAPACITOR DISCHARGE IGNITION SYSTEM INCLUDING SPARK DURATION EXTENDER MEANS
Peter Dogadko, Chicago, Ill., assignor to Motorola Inc., Franklin Park, Ill.
Filed Dec. 14, 1972, Ser. No. 315,267
Int. Cl. F02p *1/00*
U.S. Cl. 123—148 OCD **8 Claims**

A capacitive discharge ignition system for providing an extended ignition coil output voltage duration includes main and auxiliary storage capacitors connected to an ignition coil. A charging oscillator provides charging current for both capacitors. A first SCR triggered by the engine points or magnetic breakerless assembly, discharges the main capacitor into the ignition coil. A timer circuit operable in response to the discharge of the main capacitor triggers the second SCR con-

nected to the auxiliary capacitor and ignition coil after a predetermined time delay. The triggering of the second SCR



discharges the auxiliary capacity into the ignition coil. The successive discharging of the main and auxiliary capacitors provides the increased ignition coil output voltage duration.

3,832,987

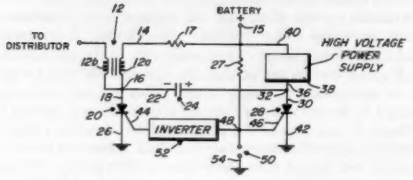
INDUCTIVE STORAGE IGNITION SYSTEM

Philip D. Gunderson, Prospect Heights, and Chi Sun Lai, Lake Zurich, both of Ill., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Mar. 2, 1973, Ser. No. 337,615

Int. Cl. F02p *1/00*

U.S. Cl. 123—148 E **4 Claims**



An inductive storage ignition system for an internal combustion engine includes a pair of silicon controlled rectifiers (SCR's) between the anodes of which is connected a commutating capacitor. The anode of a first one of the SCR's is connected to the vehicle ignition coil which in turn is connected to the positive terminal of the vehicle battery. The anode of the other SCR is connected to a direct current high voltage source. The gate electrodes of the SCR's are connected to the ignition points of the vehicle for alternate operation thereby. The high voltage source charges the commutating capacitor which supplies a reverse direct current high voltage pulse at the anode of the first SCR upon operation of the second SCR to conduction by the points, to ensure turn off of the first SCR despite any forward voltage transients produced at the ignition coil.

3,832,988

OVEN VENT FOR SMOOTH TOP RANGE

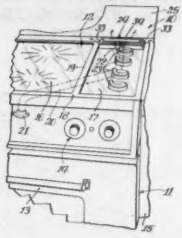
John T. Doner, Marion, Ohio, assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Jan. 2, 1974, Ser. No. 430,176

Int. Cl. F24c *3/00*

U.S. Cl. 126—21 R **13 Claims**

A smooth top range having a vent for venting hot oven gases through the continuous panel cooktop portion. The vent is arranged to direct the gases away from manually operable control elements disposed on the cooktop so as to avoid high temperature conditions thereof and to avoid directing of the hot gases against a user thereof.



3,832,989

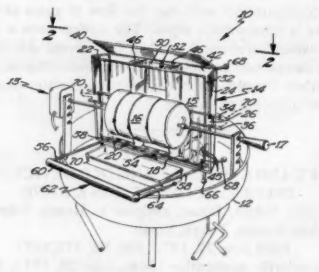
CHARCOAL FIREBOX

Robert O. Belford, 7114 Oliver Ave. South, Minneapolis, Minn. 55423

Filed Sept. 10, 1973, Ser. No. 396,077

Int. Cl. A47j *37/04*; **F24b** *3/00*

U.S. Cl. 126—25 R **8 Claims**



A charcoal firebox for use as an accessory with a rotisserie, brazier or the like comprises a metallic enclosure for a layer of burning coals, the enclosure defined by a grill removably mounted to an open face pan. The grill is formed of spring tensionable material and is spaced from and confronts the central reflector plate of the pan, the spacing between grill anc central plate being less at the bottom of the grill than at the top so that an unburned or newly ignited coal fits easily between plate and grill at the top of the grill but such coals at the bottom of the grill bow the grill forwardly outwardly from the central plate, spring tensioning the grill and generating a grill restoring force causing the lower end of the grill to exert rearwardly directed force on the adjacent coals, retaining them against the central plate as the spring tensioned grill bottom moves rearwardly to follow the coals toward the central plate retaining them against the central plate as the coals are reduced in size by combustion; this structure assures that coals adjacent the top of the grill do not drop to the bottom until the coals adjacent the bottom are substantially reduced in size thereby preserving the single layer depth of coals for a prolonged period.

Divider ribs on the central reflector plate divide the enclosure into three compartments, permitting burning coals to be concentrated in one or more of these compartments for improved cooking efficiency. The firebox has a handle assembly extending forwardly from the pan to permit the pan to be placed at various angles relative to the rotisserie to achieve improved cooking results. The handle assembly is weighted

sufficiently that when the handle assembly is raised and lowered relative to a horizontal plane to change the angle of the pan relative to the plane, the pan will not tip rearwardly. Support means is mounted to the handle assembly and is extendable toward the brazier bowl to retain the handle at a plurality of predetermined distances above the brazier, controlling the angle between pan and brazier bowl for optimum cooking results.

3,832,990

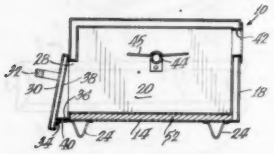
PORTABLE BROILER

Charles P. Trosch, P.O. Box 919, Oak Park, Ill. 60303

Filed Apr. 16, 1973, Ser. No. 351,165

Int. Cl. A47j *37/00*; **F24c** *5/08*

U.S. Cl. 126—41 R **4 Claims**



A completely portable broiler which comprises an enclosure having a single gas burner located above a heat retaining metal casting assembled in the bottom of the enclosure, which upon being preheated, permits food to be cooked on both sides simultaneously without the flame touching the food, or without burning any liquid, such as fat, which is emitted from the food while cooking. The enclosure includes a door at one side together with openings to enable upward ventilation through the oven while cooking, aided by exhaust openings along the top of the rear wall.

3,832,991

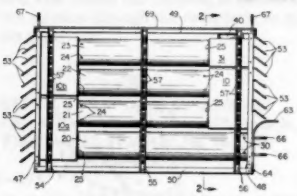
RADIANT SPACE HEATER

Irvin L. Schlosser, 29 E. Broad St., Hatfield, Pa. 19440

Continuation-in-part of Ser. No. 281,743, Aug. 18, 1972, abandoned. This application June 21, 1973, Ser. No. 372,076

Int. Cl. F24c *3/06*

U.S. Cl. 126—91 A **12 Claims**



A radiant space heater includes separate and functionally distinct module units for (a) supporting a burner, (b) reversing the flow of combustion gases, and (c) supporting a tube end for discharge into a chimney, combustion tubes connecting them in serial order and two side frames which support the module units and which are themselves held in spaced relationship by the module units.

3,832,992

NATURALLY AIR-CONDITIONED DWELLINGS

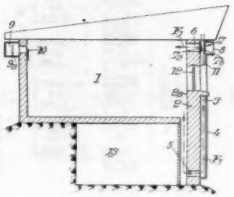
Felix Trombe, Paris, and Jacques Michel, Neuilly-sur-Seine, both of France, assignors to Agence Nationale De Valorisation De La Recherche (Anvar), Courdevoie, France

Filed June 26, 1972, Ser. No. 265,989

Claims priority, application France, June 29, 1971, 71.23778

Int. Cl. F24j *3/02*

U.S. Cl. 126—270 **17 Claims**



The dwelling is equipped with an installation for natural convective air conditioning comprising at least one thermal enclosure bounded by a frontage element of the dwelling exposed to solar radiation and an outer wall transparent to solar radiation and opaque to the far infrared radiation. This outer wall is arranged closé to said frontage element, the top and the bottom of this thermal enclosure being able to communicate with the dwelling. The thermal enclosure has at its upper portion, first distributor means arranged to direct hot air into the dwelling or to the outer and the dwelling has a cold air inlet device provided with closure means.

3,832,993

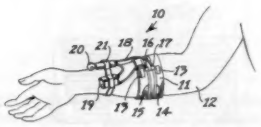
BLOOD DETECTING DEVICE

Wendell V. Clipp, 900 Robertson Academy Rd., Nashville, Tenn. 37220

Filed Sept. 13, 1972, Ser. No. 288,501

Int. Cl. A61b *5/00*

U.S. Cl. 128—2 R **1 Claim**



A blood detecting device including an elongated, flexible tape member comprising an electrical insulating member supporting a pair of electrical conductors connected to a circuit including a source of electrical energy and an electrically energized signal for application to an area likely to be exposed to the flow of blood, such as the body of a human or animal or to conduits of blood in blood handling apparatus.

3,832,994

CARDIAC MONITOR

Haim I. Bicher, Charleston, S.C., and Lon A. Sorenson, Cherry Hill, N.J., assignors to Mediscience Corporation, Collingswood, N.J.

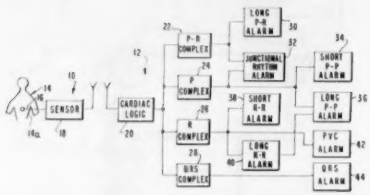
Filed Apr. 21, 1972, Ser. No. 246,124

Int. Cl. A61b *5/04*

U.S. Cl. 128—2.06 A **10 Claims**

A cardiac monitor provides a real time analysis of critical cardiac functions. The cardiac monitor includes a first unit which, via a plurality of electrodes, is utilized to sense atrial

and ventricular activity of a patient's heart to provide an analog EKG signal which includes the P,Q,R,S and T components of the analog EKG signal. The analog EKG signal is converted to a voltage controlled frequency modulated signal which is transmitted, via an FM transmitter, to a remote second unit which is advantageously carried by the patient. In the second unit, the analog EKG signal is detected in an FM detector and processed in an analog to digital converter which provides digital pulses related to the P,Q,R,S and T components of the analog EKG signal. The digital pulses are processed in various logic processing circuits which develop signals containing cardiac information. The cardiac information signals are analyzed to provide various alarm signals responsive to the sensing of cardiac abnormalities. Among the abnormalities which are sensed are atrial and ventricular bradycardias, atrial and ventricular tachycardias, long ventricular contractions, long atrial to ventrical conductions, premature ventricular contractions and junctional rhythms.



3,832,995

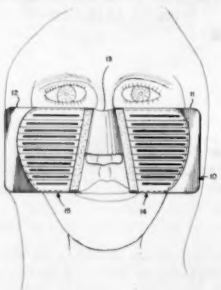
FACIAL REDUCING APPARATUS

Ralph E. Welch, 914 Winthorne Dr., Nashville, Tenn. 37217

Filed Apr. 2, 1973, Ser. No. 346,961

Int. Cl. A61h *29/00*

U.S. Cl. 128—24.1 **4 Claims**



A cosmetic device including a thin sheet of relatively nonporous plastic material, such as polyethylene, and two pressure pads, each pad comprising a hand-size resilient pad with relatively rigid shell adhered to one major surface. The plastic sheet is placed across the face below the eyes, above the eyes, against the cheeks or any location on the face or neck where reduction is desired, and the pressure pads are placed thereon with the other major surface pressed against the cheeks to produce heat with pressure, causing perspiration and temporary decrease in the volume of fatty areas beneath the sheet. Application of the device is accompanied, preceded and/or followed by exercise of the facial muscles. Each pressure pad is a sponge rubber or the like material of convenient size and thickness to be held in the hand. The relatively stiff shell is provided with elongated stiffening ribs and with slots to permit limited vapor permeation therethrough. Each shell has a partial skirt extending around a portion of the sponge rubber to control the distortion of the sponge rubber as it is placed against the face. In another embodiment each hand-held pad is provided with a sheet of nonporous plastic partially surrounding and attached to the pad and shell. The separate sheet is dispensed with. The above can be used in conjunction with steam generating means.

3,832,996

ENDOPROSTHESIS FOR THE PENIS AND A METHOD OF ENDOPROSTHETIC REPAIR

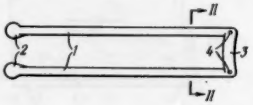
Viktor Konstnatinovich Kalnberz, ulitsa Stendera 13, kv. 2, Riga, U.S.S.R.

Filed Jan. 15, 1973, Ser. No. 323,364

Claims priority, application U.S.S.R., Feb. 4, 1972, 1741410

Int. Cl. A61f *5/00*

U.S. Cl. 128—79 **7 Claims**



Two bars made of an alloplastic material are interconnected by a cross-piece which, when the prosthesis is installed in the penis, is disposed at the pubic bone and serves as a support for the prosthesis. The opposite ends of the bars have spherical bulges disposed near the glans when the prosthesis is placed in the cavernous bodies. Endoprosthetic repair consists in incising the skin, the subcutaneous connective tissue and the penis fascia at the base of the cavernous bodies. Between the fascia and the albuginea tunica of the cavernous bodies channels are formed, through which the endoprosthesis is inserted, with its spherical bulges directed toward the glans, until these bulges are immersed in the cavernous bodies near the glans. The cross-piece is positioned at the pubic bone. Then the endoprosthesis is sutured to the surrounding tissues, the ligature being passed through the orifices in the endoprosthesis.

3,832,997

ORTHOPEDIC DEVICE FOR COMBINATION WITH A PLASTER CAST

Richard R. Cappelletti, Kinderhook, N.Y., assignor to Lambda Development Ltd., Albany, N.Y.

Filed Aug. 30, 1972, Ser. No. 284,957

Int. Cl. A61f *5/04*

U.S. Cl. 128—85 **21 Claims**

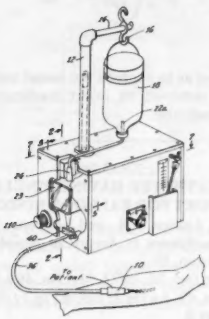
The device is intended for combination with a plaster cast of the type which is applied to the foot of a fracture patient and leaving the toes uncovered. The device comprises a U-shaped member adapted to be attached at the ends thereof to the opposite sides of a plaster cast and extending around the front of the cast to protect the patient's toes, and to serve as a toe traction splint when required.

3,832,998

INTRAVENOUS FEEDING APPARATUS

David Paul Gregg, P.O. Address Calle Iturbo, 12, Madrid, Spain

Filed Jan. 30, 1973, Ser. No. 328,052
Int. Cl. A61m 5/16
U.S. Cl. 128—214 E **10 Claims**



Improved intravenous feeding apparatus, and the like, is provided for controlling the drip flow of an intravenous solution into the patient's vein so that a pre-set drip rate may be maintained. The embodiment of the invention to be described includes an internal mechanical differentiating means which compares the actual drip rate of the solution through a receptacle with a pre-set drip rate, and which responds to any deviation of the actual drip rate from the pre-set drip rate to correct the flow of the solution so that the actual drip rate is maintained in correspondence with the pre-set drip rate at all times. The actual drip rate is detected by mounting a vane and magnetic member inside a receptacle through which the solution is dripped, the vane responding to each drip to turn itself and the magnetic member reciprocally about an axis. An external magnetic member responds to movements of the internal magnetic member to control a first mechanism which is coupled to the differentiating means. A metronome type of timer, which is set in correspondence with the pre-set drip rate is also coupled to the differentiating means, so that the differentiating means may compare the actual drip rate with the pre-set drip rate. Any departure of the actual drip rate from the pre-set drip rate causes the differential means to change the flow of the solution through the receptacle so as to compensate for the departure.

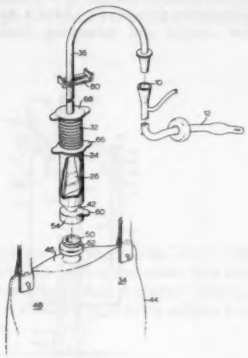
3,832,999

STERILE DRAINAGE ASSEMBLIES

Robert R. Crilly, 47 Normark Dr., Thornhill, Ontario, Canada

Filed June 22, 1972, Ser. No. 265,246
Int. Cl. A61f 5/44
U.S. Cl. 128—275 **3 Claims**

For use in sterile drainage procedures, particularly in medicine and surgery and designed for insertion in the fluid communication line between a catheter and a sink, a rigid-walled jacket enclosing a dry chamber is introduced. This chamber is provided with upstream and downstream end intake and discharge ports respectively and contains a downstream-opening elongated elastomeric flutter valve secured to the upstream chamber-end in communication with said intake port. Manually operable pump means co-axial with the jacket and on the upstream side thereof also communicate with the said intake port. A cap may be integrally secured to the downstream end of the jacket to seal the intake aperture of an elastomeric collapsible sink in the form of a drainage container having a rigid upper wall in which said aperture is



located, such rigid upper wall maintaining the upper parts of the collapsible side walls spaced apart to facilitate fluid reception.

3,833,000

MEDICAL ASPIRATION SYSTEM

Henry Bridgman, P.O. Box 71, Convent Station, N.J. 07961

Filed June 2, 1972, Ser. No. 258,960
Int. Cl. A61m 1/00
U.S. Cl. 128—276 **15 Claims**

A medical vacuum aspiration system preferably for use in vacuum abortions and diagnostics. The system is designed for operation at high vacuum and includes a single transparent container which provides the reservoir of vacuum, the chamber for collecting the aspirated products, a trap for the collection of tissue and the handle for the cannula. The container is provided with a cap and valve on which the cannula is directly mounted. The invention also includes a preferred method for producing high vacuum inside of the chamber.

3,833,001

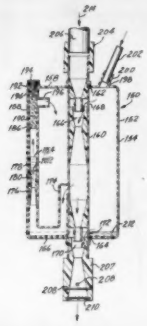
PORTABLE DEMUCOSANT

Michael A. Abrahams, East Orange, N.J.; Alvin Brent Blacksburg, Flushing, N.Y., and Sidney Rand, Elmhurst, N.Y., assignors to Breath-E-Z Corporation, Flushing, N.Y.

Filed Aug. 6, 1971, Ser. No. 169,780
Int. Cl. A61m 1/00
U.S. Cl. 128—277 **16 Claims**

A portable, self-cleansing apparatus for aspiration and removal of sinus fluids and/or tracheal secretions, etc., is shown. The apparatus includes a vessel and a venturi tube extending into the vessel which draws a vacuum therein. In a preferred embodiment of the invention the venturi tube passes

through the vessel and includes a recirculation conduit downstream of the vena contracta of the venturi for providing a cleansing, recirculating flow of motive water into the vessel. The recirculation conduit may have a water treatment length and flow control and measuring devices to measure the



vacuum drawn in the vessel. In another embodiment the apparatus includes a second vena contracta in the bottom portion of the venturi tube for aspiration of collected matter from the interior of the vessel. The apparatus of this invention may be used conveniently and with safety in the home by children and adults.

3,833,002

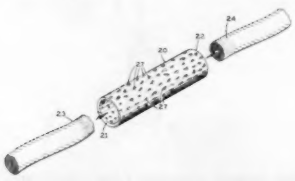
APPARATUS FOR AIDING SEVERED NERVES TO JOIN

James R. Palma, 1502 Curry Rd., Schenectady, N.Y. 12306

Filed Sept. 10, 1973, Ser. No. 395,906

Int. Cl. A61b *17/04*

U.S. Cl. 128—334 R **7 Claims**



A surgical tube for aiding severed nerves to join, composed primarily of a slow-dissolving material and having small, discrete areas which dissolve faster. These discrete areas may be provided by particles of a different, faster-dissolving material that are embedded in the tube wall, or by a greatly reduced thickness of the tube wall itself at these areas.

3,833,003

INTRAVASCULAR OCCLUDING CATHETER

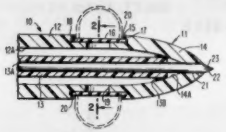
Alfred Taricco, 5 Miron Dr., Poughkeepsie, N.Y. 12603

Filed July 5, 1972, Ser. No. 269,069

Int. Cl. A61b *17/34;* **A61m** *25/00*

U.S. Cl. 128—347 **18 Claims**

A balloon type intravascular occluding catheter comprising a first and second flexible tube and a tapered nose at one terminal end of the tubes. An elastic annulus circumscribes the tubes rearwardly of, but adjacent to the nose and is connected in such a manner as to be inflatable to form a balloon by fluid applied through apertures in the first of the tubes which underlies the annulus of flexible material. A trocar is removably disposed in the second tube, the trocar having a vessel piercing tip thereon, and an aperture in the nose which is aligned with the trocar to permit entrance and egress of the tip beyond the nose so as to engage the vessel wall for penetration thereof and entry of the catheter thereinto. Thereafter the balloon



may be inflated so as to occlude the vessel and, if desired, the trocar may be removed to inject medication or the like through the second tube.

3,833,004

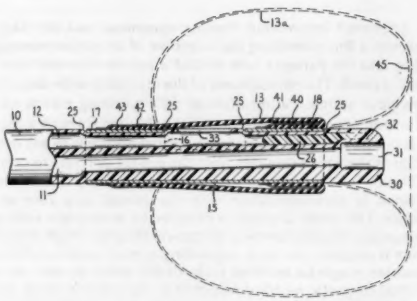
BALLOON CATHETER HAVING SINGLE FERRULE SUPPORT FOR BALLOON BINDINGS

Jose A. Vazquez, Anasco, P.R., and Lawrence W. Blake, Costa Mesa, Calif., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed Oct. 26, 1973, Ser. No. 409,854

Int. Cl. A61m *25/00;* **B23p** *11/02*

U.S. Cl. 128—349 B **2 Claims**



A catheter tube is extruded from a thermoplastic material having a memory characteristic. An end portion of the tube is heated sufficiently to soften the plastic and permit the end portion to be drawn out to a reduced diameter. A single rigid metal ferrule having a window opening therein is placed on the reduced end portion and this portion is heated again but in relaxed condition, causing it to re-expand and lock the ferrule in place. A balloon inflation opening is formed in the catheter tube communicating with a lumen therein through the window opening in the ferrule. A sleeve of balloon material is secured by bindings over end portions of the ferrule beyond opposite ends of the window opening. The ferrule provides rigid support for the balloon bindings so that the lumen or lumens in the catheter are not constricted by the bindings.

3,833,005

COMPARED COUNT DIGITALLY CONTROLLED PACEMAKER

Robert C. Wingrove, Circle Pines, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

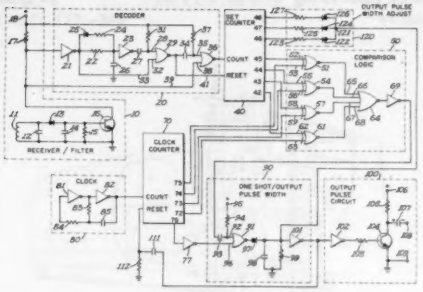
Filed July 26, 1971, Ser. No. 166,219

Int. Cl. A61n *1/36*

U.S. Cl. 128—419 P **25 Claims**

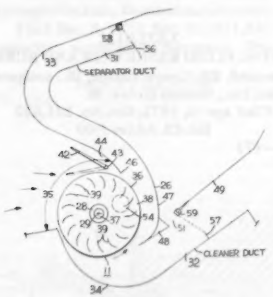
A cardiac pacer having adjustable rate and/or pulse width controls controlled by digital means including a first counter for receiving information and storing the data, a second

counter connected to clock means, and logic means for comparing the outputs of the first and second counters to determine pulse rate and width. The preferred embodiments of the digitally controlled pacer include means connected to the first



counter for receiving coded set signals and rejecting noise and other interference signals. The preferred embodiment of a transmitter for sending coded signals to the pacer is also shown, the transmitter being digitally operable to provide coded bursts of RF pulses to the pacer receiver.

3,833,006
DUCT DAMPER FOR TRANSVERSE FAN
William F. Temple, Independence, Mo., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.
Filed Dec. 1, 1972, Ser. No. 311,339
Int. Cl. A01f *12/44*; F01d *1/14*
U.S. Cl. 130—27 HF **4 Claims**



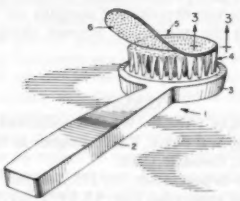
A transverse fan for use in the cleaning and separating mechanism of a combine harvester and wherein such transverse fan is provided with a choke vane mechanism positioned in the air inlet for such fan, and with a damper mechanism positioned in the air outlet of such fan, such mechanisms being adjustable, singularly or in combination to vary the amount of air being delivered by such fan.

3,833,007
ARTIFICIAL EYELASHES
Peggy S. Jacobs, 1203 Glenwood, Oklahoma City, Okla. 73116
Filed Sept. 27, 1971, Ser. No. 183,785
Int. Cl. A41g *3/00*
U.S. Cl. 132—53 **10 Claims**

A method and articles for applying artificial eyelashes to a human subject, such articles consisting of a plurality of single, but feathered lashes, each single feathered lash extending several lash ends having one group fold secured together as by crimping, adhesion or tying, and a latex-base liquid surgical-type adhesive for securing the single feathered lashes to the subject's already-existing natural lashes in a semi-permanent, long-lasting secure fastening. The method consists of applying the adhesive to the single feathered eyelashes and placing the

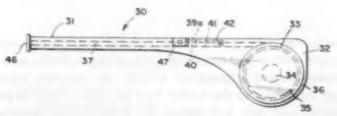
single feathered eyelash on the upper side, lower side or between the subject's already-existing eyelashes, thus extending the length of the natural lash. This procedure utilizing the article may be applied to either or both of the subject's upper and lower natural lashes.

3,833,008
APPLICATOR FOR HAIR
Hill Blackett, Jr., 811 Prospect Ave., Winnetka, Ill. 60093
Filed Nov. 9, 1972, Ser. No. 305,155
Int. Cl. A45d *44/18*
U.S. Cl. 132—85 **7 Claims**



An applicator for cleansing and conditioning hair is provided comprising a brush and a removable pad.

3,833,009
DENTAL FLOSS DISPENSER
William E. Bennington, 5 Fillmore Dr., St. Armands, Sarasota, Fla. 33577
Continuation-in-part of Ser. No. 54,253, July 13, 1970, abandoned. This application Jan. 5, 1972, Ser. No. 215,532
Int. Cl. A61c *15/00*
U.S. Cl. 132—91 **2 Claims**



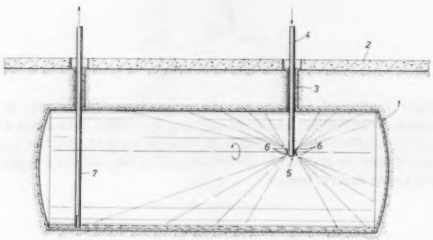
This invention relates to a spool-type dental floss dispenser comprising a body portion containing a retaining cell for dental floss and an elongated finger portion from which the floss is dispensed. The floss is threaded through the dispenser and at one point exits to pass over braking means and serrated means and reenters into the finger portion to provide control of the floss during use. In other modifications thereof, the floss does not exit, and control during use is provided by braking means within the dispenser.

3,833,010

METHOD FOR CLEANING GASOLINE STORAGE TANKS

David C. McDermott; Errol V. Seymour, and Paul E. Titus, all of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Mar. 20, 1973, Ser. No. 343,075
Int. Cl. B08b 9/08, 3/08, 3/02
U.S. Cl. 134—24 6 Claims



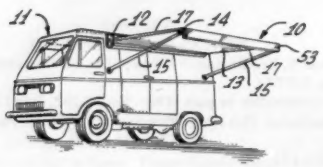
Service station gasoline storage tanks are cleaned by jet spraying a high viscosity cleaning fluid such as aqueous cellulose gum solution by means of a rotating nozzle over the interior surface of the tanks with sufficient pressure to break loose rust and hydrocarbon deposits and pumping out the cleaning fluid containing the suspended deposits along with other debris.

3,833,011

RETRACTABLE AWNING ASSEMBLY

Donald D. Duffy, Seal Beach, Calif., assignor to W & F Manufacturing, Inc., Glendale, Calif.

Continuation-in-part of Ser. No. 275,206, July 26, 1972, abandoned. This application Mar. 13, 1974, Ser. No. 450,769
Int. Cl. E04f 10/06
U.S. Cl. 135—5 AT 13 Claims



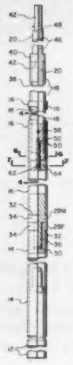
A retractable awning assembly including an elongated housing mountable on a recreational supporting vehicle and carrying a spring-loaded elongated roller, an awning having an inner edge attached to the roller and an outer edge secured to an elongated lead bar, and means for bracing the awning in an extended position. The bracing structure includes main brace arms pivotally connected to the ends of the lead bar to extend between the lead bar and anchors on the vehicle, and stabilizer arms pivotally attached to the brace arms to extend between the brace arms and anchors on the housing. The brace arms are channels which receive the stabilizer arms for storage, and the lead bar also is a channel which receives the main brace arms for storage, with the stabilizer arms nested in them. In an alternative embodiment, the inner edge of the awning is attached to the receptacle, and the awning is retracted by rolling it upon the lead bar.

3,833,012

ADJUSTABLE TENT POLE

Joseph D. McAllister, 401 Franklin, Denver, Colo. 80218

Filed Apr. 27, 1973, Ser. No. 355,187
Int. Cl. F16b 7/10; E04g 25/02; E21d 15/14
U.S. Cl. 135—15 PQ 5 Claims



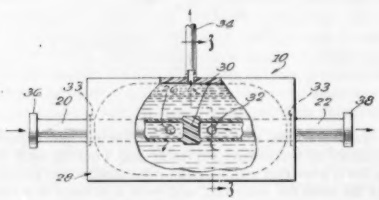
This invention relates to an adjustable multi-section tent pole characterized by a pair of axially-adjustable telescoping tubes at one extremity, the smaller of which carries a plug with a freely-rotatable eccentrically mounted knurled ring thereon that will releasably lock inside the larger of said tubes upon relative rotational movement therebetween in either direction.

3,833,013

SELF-VALVING FLUID RESERVOIR AND BUBBLE TRAP

Ronald J. Leonard, Elk Grove Village, Ill., assignor to Baxter Laboratories, Inc., Morton Grove, Ill.

Filed Apr. 6, 1972, Ser. No. 241,622
Int. Cl. A61m 5/00
U.S. Cl. 137—171 6 Claims



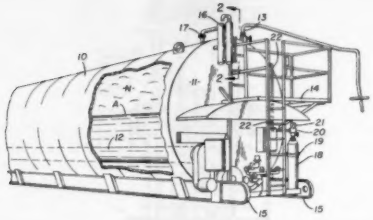
A self-valving fluid reservoir and bubble trap for a fluid flow line is disclosed which comprises a tubular conduit carrying a transverse, flow-blocking partition in the conduit flow path. The conduit defines upstream and downstream lateral ports on each side of the partition to permit fluid communication between the interior and exterior of the conduit. A flexible, expansible and collapsible, sealed reservoir chamber is mounted on the conduit to enclose the lateral ports. The chamber receives excess fluid in the flow line by expansion, but collapses against and occludes the downstream port or ports in the absence of excess fluid in the reservoir chamber.

3,833,014

ASPHALT STORAGE TANK WITH INERT GAS SEAL

William F. Scheetz, Canfield, Ohio, assignor to Hy-Way Heat Systems, Inc., Youngstown, Ohio

Filed Nov. 15, 1972, Ser. No. 306,613
Int. Cl. F16k *9/00*
U.S. Cl. 137—251 4 Claims



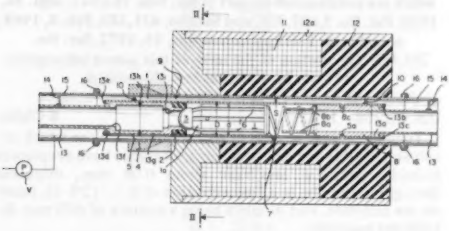
A storage tank incorporating heating means for a liquid asphalt incorporates means for introducing and retaining low pressure inert gas as a sealing medium to provide emission free heated asphalt storage.

3,833,015

ELECTROMAGNETIC VALVE

Rudolf Kneuer, Walchstadt/Icking, Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Germany

Filed Dec. 4, 1972, Ser. No. 311,506
Claims priority, application Germany, Dec. 11, 1971, 2161605
Int. Cl. F16k *31/06*
U.S. Cl. 137—334 7 Claims



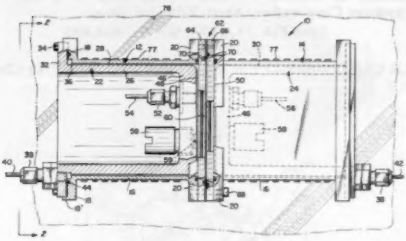
An electromagnetic valve, especially for the control of low-temperature fluids such as cryogens, comprising an inner duct preferably of thermally nonconductive material or of a material weldable to the inner duct of a double-wall pipe line, a valve seat within the duct and a magnetically shiftable body movable within the duct into and out of engagement with the valve seat. The inner duct is spacedly surrounded by an outer duct which, in turn, may be surrounded by the electromagnet coil, the space between the ducts forming an insulator between the electromagnet and the valve members. This space is evacuated and/or filled with a thermally insulating material.

3,833,016

APPARATUS FOR PRECISELY CONTROLLED DILUTION OF FLUID SAMPLES

Daniel P. Lucero, Triangle; James D. Barden, Manassas, and Joseph W. Paljug, Falls Church, all of Va., assignors to Meloy Laboratories, Inc., Springfield, Va.

Filed Jan. 2, 1973, Ser. No. 320,660
Int. Cl. F02m *17/28*
U.S. Cl. 137—340 42 Claims



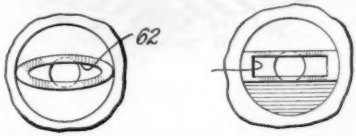
Concentrated fluid samples, such as flue gas samples, are diluted with high accuracy by precisely controlled diffusion through a permeable membrane. The membrane transversely divides a cylindrical housing into two parts, each part having a cup-shaped core therein with an end wall spaced from the membrane to provide transverse-radial flow passages at opposite sides of the membrane and with a side wall spaced from the side wall of the housing to provide longitudinal flow passages of annular cross-section. Fluid is admitted to each longitudinal passage by means of an enlarged circumferential flow distributing passage and is exhausted from each transverse passage by means of a conduit extending through the end wall of the associated core. Electric heating elements are supported upon the side wall of the housing and are controlled by temperature sensors in the transverse passages adjacent to the permeable membrane. The entire housing is surrounded by insulation so that precise control of the temperature within the housing is possible.

3,833,017

HYDRAULIC VALVE WITH NON-ROUND CONTROL NOZZLE

Carroll G. Gordon, 3 William Ct., Menlo Park, Calif., and William F. Stoesser, 3366 Fayette Dr., Mountain View, Calif. 94040

Filed Apr. 9, 1973, Ser. No. 348,923
Int. Cl. F16k *11/00*
U.S. Cl. 137—625.62 6 Claims



It is conventional to employ a round nozzle and a movable flapper in a "hydraulic means" in certain types of hydraulic or servo valves in order to control the movement of a valve member in such a valve in connecting various conventional ports. Such a valve can be improved by forming the nozzle of a shape such as an elongated rectilinear or oval which max-

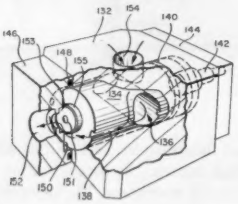
imizes the perimeter length around the nozzle per unit of cross-sectional area of the nozzle. This maximizes the flow between the nozzle and the flapper in various positions of the flapper without a corresponding increase in the force of hydraulic fluid exerting pressure on the flapper. Several of such nozzles are normally used in a valve. The flapper in a valve as indicated is normally moved by a torque motor.

3,833,018

LOW LEAKAGE VACUUM VALVE AND CHAMBER USING SAME

Norman B. Brooks, Carlisle, Mass., assignor to Pass-Port Systems Corporation, North Billenica, Mass.

Filed Feb. 21, 1973, Ser. No. 334,455
Int. Cl. F16k *11/07*
U.S. Cl. 137—625.47 15 Claims



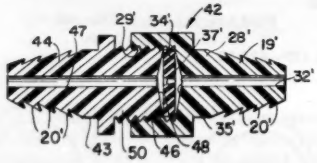
A low-leakage vacuum valve provides direct access to the interior of an evacuated chamber when opened while maintaining a substantial pressure differential when closed. A simplified vacuum chamber uses the valve to advantage in processing materials.

3,833,019

QUICK-CONNECT FITTINGS FOR A TRICKLE TYPE IRRIGATION SYSTEM

Richard E. Diggs, 210 N. River St., P.O. Box 776, Carthage, Mo. 64836

Filed Dec. 30, 1971, Ser. No. 213,927
Int. Cl. F16d *1/00*
U.S. Cl. 138—45 9 Claims



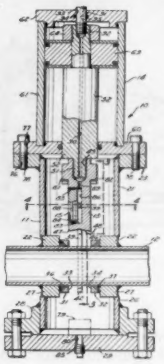
Quick-connect fittings for a trickle-type irrigation system wherein the fittings include gripping means thereon for quickly and easily joining the fittings to plastic pipes and the like without requiring the use of tools. In one form of the invention, the fitting has piercing means thereon for penetrating the wall of a plastic pipe to make a secure and leak-tight connection thereto without requiring the use of tools; and in another form of the invention, adjustable resilient orifice means is in the fitting.

3,833,020

APPARATUS FOR PLUGGING PIPE

Joseph B. Smith, Cleveland, Ohio, assignor to The Pipe Line Development Company, Cleveland, Ohio

Division of Ser. No. 13,295, Feb. 24, 1970. This application Nov. 8, 1971, Ser. No. 196,456
Int. Cl. F16l *55/10*
U.S. Cl. 138—94 21 Claims



An apparatus and method for blocking a conduit or pipe carrying fluid under pressure. The apparatus comprises a fluid tight housing adapted to be secured to the exterior of an intermediate portion of the pipe, a cutter or shear within the housing, an actuator for moving the shear through the wall of the pipe, and a sealing surface engageable with a portion of the pipe while the shear extends into the pipe.

3,833,021

DELUSTERED REGENERATED CELLULOSE SAUSAGE CASINGS

Henry J. Rose, and Albin F. Turbak, both of Danville, Ill., assignors to Tee-Pak, Inc.., Chicago, Ill.

Continuation of Ser. No. 102,958, Dec. 30, 1970, abandoned, which is a continuation-in-part of Ser. Nos. 763,942, Sept. 30, 1968, Pat. No. 3,607,328, and Ser. No. 431,181, Feb. 8, 1965, abandoned. This application Apr. 10, 1972, Ser. No. 242,755. The portion of the term of this patent subsequent to Sept. 21, 1988, has been disclaimed.
Int. Cl. A22c *13/00*
U.S. Cl. 138—118.1 8 Claims

Tubular sausage casings of regenerated cellulose which are soft and flexible and delustered in appearance have droplets of colloidal size, e.g. less than about 0.06 mm., dispersed throughout the film in a concentration of 0.1 – 12% wt. based on the cellulose, said droplets being a mixture of different delusterant materials.

3,833,022

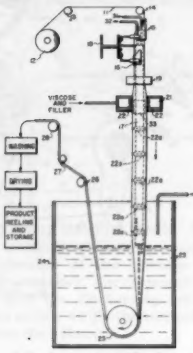
MATTE FINISH SAUSAGE CASING

Albin F. Turbak; N. O. O'Brien, and William H. Goodenow, all of Danville, Ill., assignors to Tee-Pak, Inc.., Chicago, Ill.

Filed July 24, 1972, Ser. No. 274,367
Int. Cl. A22c *13/00*
U.S. Cl. 138—118.1 11 Claims

Matte finish synthetic sausage casing made by incorporating a fibrilla filler material having an average diameter of 16–20 microns and an average length of 40–110 microns in the material used to manufacture the casing. The casing, which

may be made of regenerated cellulose or synthetic hydrophilic polymers, such as polyvinyl alcohol, may be of the unrein-



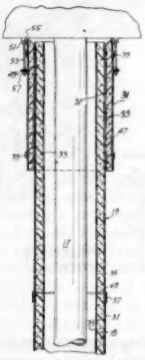
forced type or of the fibrous paper reinforced type. A preferred filler material is fibrous cellulosic floc.

3,833,023

FROST JACKET ASSEMBLY FOR WATER TOWER RISER PIPES

Earl M. Rea, 613 S. Third Ave., Sioux Falls, S. Dak. 57104

Filed Sept. 15, 1972, Ser. No. 289,416
Int. Cl. F16l 9/14; B65d 25/00
U.S. Cl. 138—148 **2 Claims**



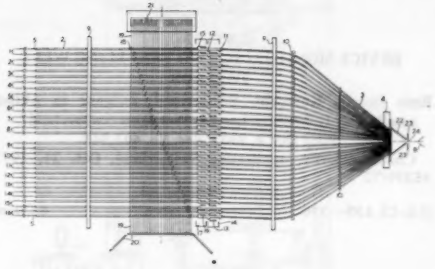
For a water tower riser pipe, an anti-freeze protector which includes a series of cylindrical frost jackets arranged end to end surrounding said pipe throughout its height. Spacers are interposed between the upper ends of each jacket and the pipe and a series of longitudinally spaced bands surround and secure said jacket. Each jacket comprises a pair of semi-cylindrical sections; and each section includes an inner and outer thin shell of glass fiber and a relatively thick foam plastic filler therebetween. Annular lap flanges depend from each jacket for cooperative enclosing sealing registry with the upper end of the adjacent frost jacket.

3,833,024

GRIPPER TYPE LOOMS

Roy Evans, and Peter Saltonstall, both of Bradford, England, assignors to John T. Hardaker Limited, Yorkshire, England

Filed Sept. 28, 1973, Ser. No. 401,607
Int. Cl. D03d 39/08
U.S. Cl. 139—2 **15 Claims**



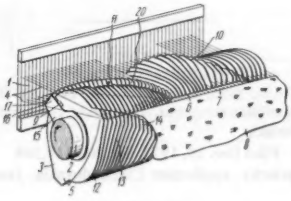
A method of controlling the yarns in a yarn selecting mechanism comprising locating yarns separately in a set of carrier tubes, guiding the outlet ends of said tubes into close relationship, selecting a predetermined number of tubes for presentation to gripper means and a griffe frame and causing a griffe bar of said frame to give the selected tubes linear movement into a forward position where the gripper means can grip the ends of yarn projecting from the tubes.

3,833,025

BEAT-UP MECHANISM FOR LOOMS

Evgeny Dmitrievich Loschilin, ulitsa 8 Marta, 34a, Domodedovo, Moskovskoi oblasti; Valerian Alexeevich Borodin, ulitsa Gubkina, 4, kv. 74, Moscow; Alexandr Alexandrovich Zabotin, Profsojuznaya ulitsa 96, kv. 85, Moscow; Eduard Arshakovich Onikov, ulitsa Panferova, 5, korpus 2, kv. 106, Moscow, and Alexandr Lvovich Galperin, ulitsa Moldagulovoi, 10, Korpus 3, kv. 166, Moscow, all of U.S.S.R.

Filed July 20, 1973, Ser. No. 380,960
Int. Cl. D03d 47/26
U.S. Cl. 139—12 **4 Claims**



The beat-up mechanism is intended for use in looms wherein the weft thread carriers are associated with a drive independent of the beat-up mechanism. The proposed mechanism may also be incorporated in looms of the progressive shedding type.

The beat-up mechanism comprises beat-up discs with lugs and slots and discs with thread-engaging teeth adapted to engage the weft thread, the apices of these teeth being disposed radially intermediate of the apices of the beat-up lugs and the

edges of the beat-up discs in the vicinity of the slots, the leading edge of the thread-engaging tooth being aligned with the rear wall of the slot and being an extension of this wall.

The discs with the thread-engaging teeth ensure guiding of the weft thread placed outside of the beat-up mechanism into the slots of the beat-up discs, to advance the weft thread toward the fell of the cloth and to make the thread leave the slots adjacent to the fell of the cloth, for subsequent weaving of the weft thread into the cloth.

3,833,026
DEVICE MONITORING TWO TRAVELING WEFT THREADS

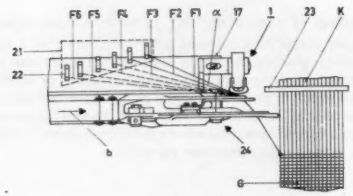
Rene Domig, Kusnacht, Switzerland, assignor to Aktiengesellschaft Gebrueder Loepfe, Wetzikon, Switzerland

Filed Oct. 4, 1973, Ser. No. 403,543

Claims priority, application Switzerland, Oct. 21, 1972, 15399/72

Int. Cl. D03d *51/34*

U.S. Cl. 139—370 **4 Claims**



A thread feeling device comprises two separate feeler members each destined to contact one of two traveling threads which are fed from separate supply locations to an operational location and form an acute angle between them on the side of the operational location. Since the monitoring occurs adjacent the operational location where the distance between the two threads is small, means are provided for separating the threads and conducting them individually to the separate feeler members. In particular, the feeling device may be used in weft stop motion equipment on a rapier loom provided with a color changer.

3,833,027
DOUBLE LIFT DOBBY

Zdenek Pavlica, Jicin, Czechoslovakia, assignor to ELITEX Zavody textilniho strojirenstvi, generalni reditelstvi, Liberec, Czechoslovakia

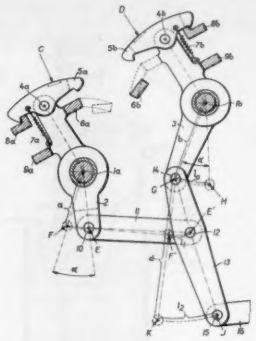
Filed Dec. 29, 1972, Ser. No. 319,308

Claims priority, application Czechoslovakia, Jan. 4, 1972, 3672-72

Int. Cl. D03c *1/06*

U.S. Cl. 139—71 **3 Claims**

A double lift dobby for dobby looms, jacquard looms and the like comprising a first and second double arm crank, each of which is rotatably journaled about independent axes spaced from and parallel to each other. One arm of each of the cranks is provided with latch means for selectively engaging a corresponding one of a driven pair of lifting knives. The cranks are thereby rotatable about their axes by and conjointly with the lifting knife after such engagement. The other arms of each of the cranks is interconnected with the means for raising and lowering the heald frame which comprises a lever connected at one end to the first of the cranks and at the other end to the means for lowering the heald frame and a tie rod



connected at one end of the second of the cranks and at its other end between the ends of the lever.

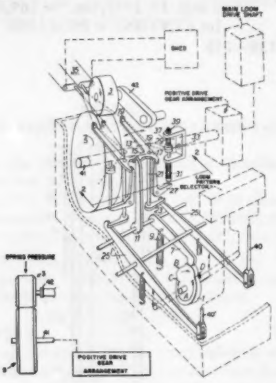
3,833,028
MEASURING APPARATUS

Keith Chattaway; Richard William Gillings, and Philip Austin Ormerod, all of Pontypool, England, assignors to Imperial Chemical Industries Limited, London, England

Filed June 19, 1972, Ser. No. 264,403

Int. Cl. D03d *47/34*

U.S. Cl. 139—122 **8 Claims**



Weft yarn measuring apparatus for delivering a given length of weft yarn to a shuttle-less loom comprising feed rolls in contact at their periphery forming a nip and means for introducing yarn into the nip while the rolls are rotating.

3,833,029
METHOD AND APPARATUS FOR GENERATING GASEOUS MIXTURES FOR INFLATABLE DEVICES

Alfred John Munn, Wayne, N.J., assignor to Walter Kidde & Company, Inc., Belleville, N.J.

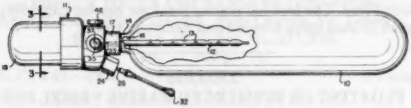
Filed Apr. 21, 1972, Ser. No. 246,365

Int. Cl. B65b *3/04*

U.S. Cl. 141—4 **13 Claims**

A pyrotechnically operated inflating apparatus is disclosed for generating gaseous inflation mixtures of carbon dioxide

and combustion products of propellants. The apparatus includes a container for storing primary fluid inflation media. A control head is mounted on the container to govern the discharge of the primary fluid into an inflatable. The control head is provided with an internal space containing a pyrotechnic charge to generate, upon ignition, high temperature gases as secondary inflation media. A quantity of the secondary media is initially diffused throughout the container to elevate the pressure of the primary media to effect discharge from the container. The remainder of the secondary media is mixed with the discharging primary media at a downstream outlet orifice within the control head immediately prior to entry into the inflatable.

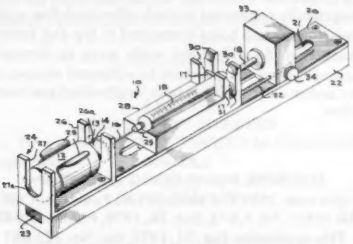


3,833,030

DEVICE FOR WITHDRAWING OR ADDING FLUIDS TO HYPODERMIC SYRINGES

Henry L. Waldbauer, Jr., 403 St. Christopher's Rd., Richmond, Va. 23226; Wylie T. Jones, 8324 Roland Dr., Richmond, Va. 23229, and Edward J. Flippo, Jr., 1325 Evergreen Ave., Richmond, Va. 23224

Filed Mar. 5, 1973, Ser. No. 337,761
Int. Cl. B65b *3/04*; **A61m** *5/18*
U.S. Cl. 141—26 **7 Claims**



A mechanical device to aid the visually handicapped in loading a hypodermic syringe with a predetermined charge of liquid from a bottle having a penetrable cap, including an elongated base having a cradle and spring clip for releasibly holding the bottle, a carriage for removably supporting a hypodermic syringe having a needle pointing toward the bottle, a stop member adjustably coupled with the carriage at variable distance therefrom to indicate by abutment of the syringe plunger rod therewith when it is withdrawn to the proper charge position, and the carriage and stop member being guided for reciprocative movement along the base between limits wherein the needle is inserted in and is withdrawn from the bottle.

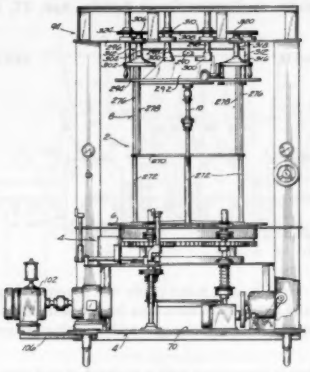
3,833,031

FILLING MACHINE FOR CONTAINERS

Paul R. Fechheimer, Worcester, Mass.

Division of Ser. No. 85,442, Oct. 30, 1970, abandoned. This application Sept. 11, 1972, Ser. No. 287,695
Int. Cl. B65b *3/04*
U.S. Cl. 141—84 **4 Claims**

A rotary container filling machine of the constant level type and which includes a series of radially arranged filling nozzles mounted above a supporting table for the containers which are to be filled for vertical slide movement relatively between raised, inactive positions to the containers and lowered, active or filling positions. The filling machine is adapted for vacuum, gravity or combined vacuum-gravity operation as desired and two distinct, readily interchangeable types of filling nozzles



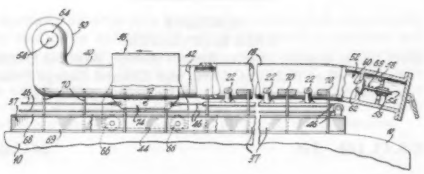
are provided the machine for the purpose of permitting the conversion from one filling mode to another. For this purpose, also, the filler machine is provided with a supply tank for the liquid which is to be introduced into the containers and which is elevationally adjustable to the filler table between a raised position thereto for gravity and combined vacuum-gravity filling and a lowered position thereto for vacuum filling.

3,833,032

TANDEM MOORING-LOADING SYSTEM

Walter R. Hnot, Mountainside, N.J., assignor to Esso Research and Engineering Company, Linden, N.J.

Filed Oct. 31, 1972, Ser. No. 302,528
Int. Cl. B65b *3/04*, *39/02*
U.S. Cl. 141—232 **15 Claims**



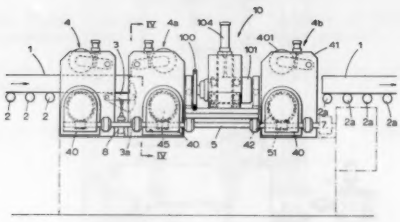
A combined mooring and loading system for the transfer of cargo (e.g., oil) from a floating offshore storage terminal (e.g., a vessel or other suitable floating member) to a shuttle tanker moored in tandem. The system includes a floating hose between the storage terminal and the shuttle tanker, which when not in use is stored on the storage terminal. A trolley is provided for retraction and paying out of the hose; and the hose is equipped with check valves at both ends to trap cargo within the hose when it is disconnected.

3,833,033

METHOD AND APPARATUS FOR WORKING ELONGATE COMPONENTS AT SUCCESSIVE LONGITUDINAL LOCATIONS

James Hurn, Somerset, England, assignor to Hurn Brothers Engineering Limited, Wiltshire, England

Division of Ser. No. 29,568, April 17, 1970, Pat. No. 3,693,683. This application June 27, 1972, Ser. No. 266,566
Claims priority, application Great Britain, Apr. 17, 1969, 19636/69
Int. Cl. B27m 3/00; B27c 9/04
U.S. Cl. 144—3 R 15 Claims



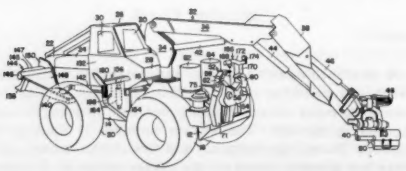
The invention is concerned with a method of and apparatus for performing a succession of working operations at preselected locations along the length of an elongate workpiece. The leading end of the workpiece is advanced up to a datum position. On the upstream side of the datum position there is located a drive roller, and on the downstream side of the datum position there is located a working station. The work station has at a predetermined distance from the datum position, at least one working tool, for example a saw or a drill. The workpiece is held against the drive roller, and then said drive roller is rotated through a succession of rotary movements, with the drive roller being stationary between movements for predetermined time intervals. During each movement the drive roller is rotated through a predetermined amount. The workpiece is thereby advanced in successive steps through said work station and successive preselected locations longitudinally of the workpiece are brought opposite the working tool, and held stationary for predetermined time intervals between the periods of movement. A second drive roller is located on the downstream side of the work station which is driven in synchronism with the upstream drive roller. Working operations are only performed when the workpiece is stationary.

3,833,034

TREE HARVESTER

Alvin Lewis Menzel; Stanley Robert Hiseler; Kenneth Quentin Kessler, all of Dubuque, Iowa, and Edward George Nelson, Moline, Ill., assignors to Deere & Company, Moline, Ill.

Filed Mar. 19, 1973, Ser. No. 342,456
Int. Cl. B27c 9/00
U.S. Cl. 144—3 D 24 Claims



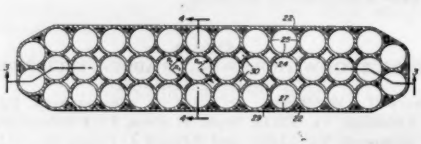
An articulated, four-wheel drive tree harvesting machine includes a front frame section upon which a felling boom assembly, a delimbing assembly and a feed assembly are mounted. The felling boom assembly is operable for severing a tree and lowering the same into a generally horizontal disposition from where the trunk of the tree may be released for engagement by feed rolls of the feed assembly and for encirclement by blades of the delimbing assembly. Once a tree is released by the felling boom assembly, the feed rolls may be operated to draw the tree trunk through the delimbing blades while the felling boom may be operated to sever and position a second tree. The tree harvesting machine has the capability to bunch at least three severed and delimbed trees.

3,833,035

FLOATING OR SUBMERGED MARINE VESSEL FOR STORAGE, SUPPORT OR TRANSPORT

Alfred A. Yee, 1441 Kapiolani Blvd., Suite 810, Honolulu, Hawaii 96814

Filed Nov. 22, 1971, Ser. No. 200,882
Int. Cl. B63b 35/44
U.S. Cl. 114—.5 T 11 Claims



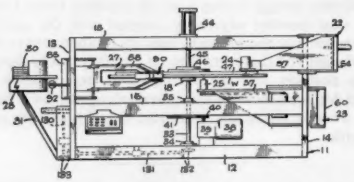
A marine structure for storage, support or transport operations, said structure comprising a plurality of vertically extending cylindrical walls formed from concrete or the like and intertangentially connected to each other to define a plurality of compartments and being connected to top and bottom hull walls such that the cylindrical walls serve as vertical shear walls strengthening the structure to withstand stresses caused by wave action and the like in both longitudinal and transverse directions.

3,833,036

MACHINE FOR MAKING TABLETOPS

Daniel Marvosh, 3085 E. Clarmeya Ln., Pasadena, Calif.

Division of Ser. No. 5,672, Jan. 26, 1970, Pat. No. 3,653,113. This application Jan. 31, 1972, Ser. No. 222,087
Int. Cl. B27c 5/02
U.S. Cl. 144—144 A 6 Claims



A machine for making tabletops having a motor-driven rotatable work support, separate shaping, grooving and banding tools mounted on doubly pivoted arms for performing operations on a workpiece mounted on the support, and automatic means for controlling the speed of rotation of the work

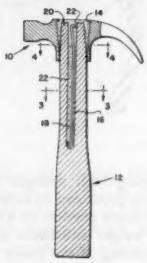
support in accordance with a predetermined pattern coordinated with the shape of work to be formed, and automatic means for controlling the movement of the pivoted arms.

3,833,037

IMPACT TOOLS AND HANDLES THEREFOR

Herbert I. Fish, 6525 Kerns Rd., Falls Church, Va. 22044

Filed July 14, 1972, Ser. No. 271,826
Int. Cl. B25g *1/10*
U.S. Cl. 145—29 R **6 Claims**



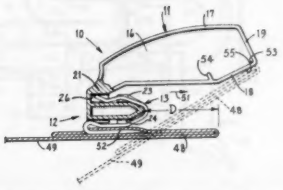
The wooden handle of a hammer or other impact tool is strengthened and the tool is reinforced against sudden loss of the head by drilling a bore along a substantial portion of the length of the handle from the head end, inserting a tension wire into the bore, and locking the ends of the wire in the bore by means of a plastic, such as an epoxy resin.

3,833,038

DRAPERY PIN INSERTER

John J. Hoare, Sturgis, Mich., assignor to Kirsch Company, Sturgis, Mich.

Filed May 7, 1973, Ser. No. 357,876
Int. Cl. B25c *3/00*
U.S. Cl. 145—46 **7 Claims**



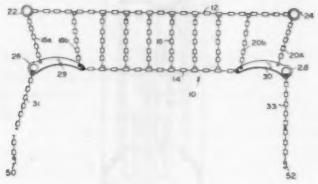
A pin inserter having an elongated handle portion for permitting manual insertion of drapery pins into draperies. The inserter has a head portion containing groove means therein for permitting a conventional drapery pin to be mounted thereon. The head portion is connected to one end of the handle portion and projects toward the rearward end of the handle portion for permitting pins to be manually inserted into draperies by means of a pulling motion. Selected points on the handle are identified and usable to locate accurately the point of insertion of the pin with respect to the edge of the drapery.

3,833,039

QUICK MOUNT TIRE CHAINS

Clarence Bear, 12720 S.W. Prince Albert, Tigard, Oreg. 97223

Filed Mar. 22, 1973, Ser. No. 343,783
Int. Cl. B60c *27/06*
U.S. Cl. 152—241 **17 Claims**



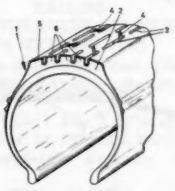
A quick mount tire chain has a pair of levers or bars each connected to a pair of end cross chains and lying against the side wall of a tire, and having eyes to receive cross ties.

3,833,040

OUTER COVER OR TYRE

Cornelis G. Bins, Heelsum, Netherlands, assignor to N.V. Rubberfabrick Vredestein, The Hague, Netherlands

Filed June 7, 1972, Ser. No. 260,498
Claims priority, application Netherlands, June 21, 1971, 7108520
Int. Cl. B60c *11/00*
U.S. Cl. 152—330 **4 Claims**



An outer cover or tyre for bicycles, autocycles, motor-vehicles and other vehicles, of which the tread is profiled and presents grooves and elevations, said cover or tyre being recovered with a filing layer of a colour which deviates from the colour of the underlying material of the cover or tyre, the grooves or parts thereof presenting a different depth preferably arranged according to a predetermined pattern.

3,833,041

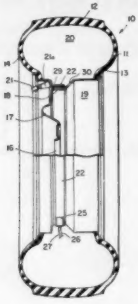
TIRE INFLATOR

Thomas J. Glad, and Willfred G. Schmidt, both of Sacremento, Calif., assignors to Aerojet-General Corporation, El Monte, Calif.

Filed Oct. 11, 1973, Ser. No. 405,356
Int. Cl. B60c *21/08, 23/06, 17/00*
U.S. Cl. 152—347 **13 Claims**

Apparatus and method for sealing and reinflating a tubeless tire after puncture or the like including an uncured puncture sealant material disposed in the tire casing chamber and a gas generator also disposed in the chamber and adapted to generate sufficient heat to cure the sealant material, and sufficient gas to reinflate the tire. The valve of the tire is a pressure

relief valve and an igniter is provided for igniting the generator at a predetermined pressure in the chamber. In this manner, if the tire is punctured, the loss of pressure in the chamber activates the igniter which ignites the generator. The heat from



the gas being generated cures the sealant material which plugs up the puncture while the gas generated inflates the tire to a desired pressure. The pressure relief valve regulates the pressure within the chamber.

3,833,042

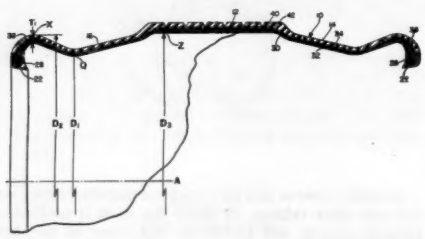
PNEUMATIC TIRE

George Timothy Watts, North Canton, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 166,049, July 26, 1971, abandoned. This application Dec. 20, 1972, Ser. No. 316,800

Int. Cl. B60c *3/00*

U.S. Cl. 152—353 **14 Claims**



A pneumatic tire having sidewalls which are foldable to a position beneath the tread and, when in the configuration in which it was cured, having a cross-sectional configuration characterized by the sidewalls being generally cylindrical and having a first diameter intermediate the edges of the tread and the beads which is less than the maximum diameter of a second region located between the region of said first diameter and the beads. The maximum diameter of the second region is greater than the inside diameter of the tread portion minus twice the sidewall thickness and a smooth convex curve connects the maximum diameter point of each second region with the axially outer side of each bead region.

The foregoing abstract is not to be taken as limiting the invention of this application, and in order to understand the full nature and extent of the technical disclosure of this application, reference must be made to the accompanying drawings and the following detailed description.

3,833,043

CASTING TIRES

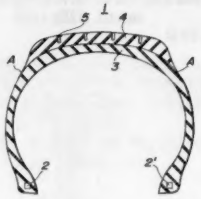
Kei Watanabe; Nobuya Yoshimura; Tasuku Saito; Naotaka Tomita, and Hisaya Uruta, all of Tokyo, Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Sept. 28, 1972, Ser. No. 293,101

Claims priority, application Japan, Oct. 7, 1971, 46-78297

Int. Cl. B60c *5/00, 9/02*

U.S. Cl. 152—357 A **4 Claims**



Casting tires having high strength and various excellent driving properties are produced by firstly casting (or molding) any one of a tread-crown portion on a case body portion with a high molecular weight substance and then prior to the completion of the curing of the firstly cast (or molded) substance, casting (or molding) the other portion with another high molecular weight substance having different physical properties from the former substance successively and curing both substances concurrently, said case body not containing any reinforcing material.

3,833,044

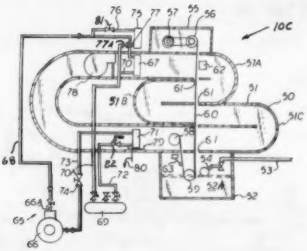
METHOD AND APPARATUS FOR REMOVING WATER SOLUBLE WASTES OR SALTS FROM AN AQUEOUS SOLUTION

Lee J. Wallace, 6 N. Forest Cir., West Haven, Conn. 06615

Filed Jan. 8, 1973, Ser. No. 321,690

Int. Cl. B01d *1/22*

U.S. Cl. 159—8 **15 Claims**



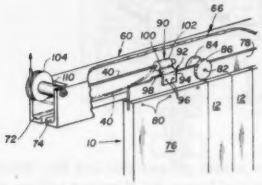
A method and apparatus for removing water soluble salts from an aqueous salt solution by directing an unsaturated evaporating medium, as for example, unsaturated air, across a readily disposable, movable curtain which has been saturated with an aqueous salt solution whereby the air effects a carryoff of the moisture leaving the salt residue deposited on an expendible screen, with heat being added to the incoming air in the event the air temperature falls below 38° F wet bulb temperature and/or its relative humidity is 85 percent or more. The air laden with moisture passing through the curtain may then be passed in heat transfer relationship to a condensor whereby the moisture is condensed and the condensate collected for use as desired.

3,833,045

SIDE COILING DOOR

Bernard J. Sivin, Commack, N.Y., assignor to The Celotex Corp., Tampa, Fla.

Filed Nov. 17, 1972, Ser. No. 307,338
Int. Cl. E06b 9/08
U.S. Cl. 160—133 1 Claim



The cable for pulling a side coiling door through closing movement along its upper track is held in offset relation to the vertical plane of the door so that any sag in the cable comes to rest along a horizontally oriented track surface rather than hanging down below said track and causing snagging, adversely detracting from the appearance of the door, or resulting in other shortcomings.

3,833,046

PROCESS AND DEVICE FOR DRAPING OR MAKING UP WALL OR OTHER SURFACES BY MEANS OF FLEXIBLE SHEETS, E.G., OF FABRICS

Gerard Tombu, Place de l'Hotel de Ville 37, 02 Saint Quentin, France

Filed Aug. 22, 1972, Ser. No. 282,805
Int. Cl. A47h 23/00
U.S. Cl. 160—327 9 Claims

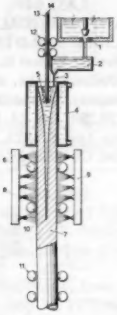
The invention pertains to a process for draping or making up wall or other surfaces by means of flexible sheets consisting in fitting, along two borders of the surface to be covered, a clamping profile part, or fixed profile part; in fitting one edge of a first fabric to a first mobile profile part clamped in waiting position to one of said fixed profile parts; in fitting the other edge of the first fabric to the other fixed profile part; in fixing one edge of a second fabric to a second mobile profile part; and in bringing successively both mobile profile parts in their final positions into said fixed profile parts, and also pertains to a device for working this process.

3,833,047

PROCESS AND APPARATUS FOR SUPPLEMENTARY COOLING OF THE CENTER OF A CONTINUOUSLY CAST METAL BAR

Raffaele Tovini, Milan, Italy, assignor to Dalmine S.p.A., Milan, Italy

Filed Nov. 9, 1972, Ser. No. 304,893
Claims priority, application Italy, Nov. 13, 1971, 31065/71
Int. Cl. B22d 11/10
U.S. Cl. 164—66 3 Claims



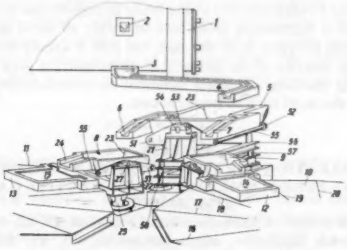
An improved process and device for the continuous casting of metal bars wherein an inert gas is insufflated into the liquid metal in the mould through a metal pipe dipped into said liquid metal and having substantially the same composition of the said liquid metal.

3,833,048

APPARATUS FOR THE ACCURATE WEIGHT CASTING OF METAL PLATES

Otto Kreuz, Duisburg, and Stephan Raab, Essen, both of Germany, assignors to Denag Aktiengesellschaft, Duisburg, Germany

Division of Ser. No. 62,051, Aug. 7, 1970, abandoned. This application Apr. 24, 1972, Ser. No. 247,209
Claims priority, application Germany, Mar. 12, 1970, 2011698
Int. Cl. B22d 1/02, 41/06, 47/00
U.S. Cl. 164—155 7 Claims



The apparatus includes a trough arranged to receive the melt material from a furnace which is tilted to dispense a selected quantity and deliver it along the trough into a first large sized vessel which is supported on a differential weighing apparatus. The large sized vessel is then selectively tilted either to the left or to the right in order to pour a quantity of

the melt into a smaller size vessel. The quantity poured is equivalent to the weight of the anode to be cast. The smaller size vessel also is supported on a differential weighing apparatus, and, when the required quantity of metal is filled into the small sized vessel, it is tilted to pour the material into a casting mold. Each small size vessel is associated with a casting wheel which has a plurality of molds with openings adjacent the periphery thereof and which are selectively aligned with the smaller size vessels in succession in order to receive a charge of the melt material.

3,833,049

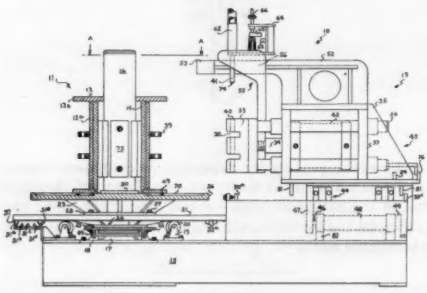
METHOD FOR AUTOMATICALLY STRIPPING A SECTIONALIZED MOLD FROM A CAST

William C. La Bahn, Scotia; Robert G. MacNary, Elnora, and William R. Smith, Ballston Lake, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 220,280, Jan. 24, 1972, Pat. No. 3,821,980. This application Apr. 5, 1973, Ser. No. 348,441

Int. Cl. B22d *29/04*

U.S. Cl. 164—131 **6 Claims**



A highly automated mold stripping machine is described wherein a single jaw sequentially strips mold sections from the cast and subsequently reassembles the stripped sections into a composite unit after removal of the cast from the interior of the stripped sections. A vertically extending, radially expandable arbor serves to retain the cast in position during stripping and dual pistons of diverse diameter drive the stripping jaw into engagement with the mold sections. As each self-supporting mold section is stripped from the cast, the section is released adjacent the edge of the turntable supporting the cast whereafter the arbor is retracted from an engaged position with the cast interior and the mold and stripped cast section are rotated independently of the arbor to register the stripping jaw with a succeeding mold section. After all mold sections have been stripped from the cast, the cast is axially removed from the interior of the stripped sections and the jaws of the stripping machine are again actuated to automatically reassemble the mold for a subsequent cast.

3,833,050

INSTALLATION FOR THE CONTINUOUS CASTING OF NON-FERROUS METALS IN A PROTECTIVE GAS ATMOSPHERE

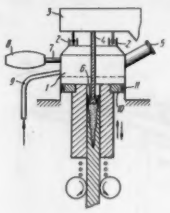
Vladimir Pavlovich Kashuba, ulitsa Lenina, 40, kv. 42; Nikolai Pavlovich Mikhailov, ulitsa Matrosova, 15, kv. 20; Lev Petrovich Fridman, ulitsa Frunze, 13, kv. 16, all of Balkhash, and Vadim Nikolaevich Rattenberg, ulitsa Sedova, korpus I, kv. 31, Moscow, all of U.S.S.R.

Continuation-in-part of Ser. No. 833,954, June 17, 1968, abandoned. This application Mar. 29, 1972, Ser. No. 239,092

Int. Cl. B22d *11/00*

U.S. Cl. 164—281 **1 Claim**

An installation for the continuous casting of non-ferrous metals in a protective gas atmosphere, comprising a mixing chamber for a liquid metal; an open-bottomed chamber filled with a protective gas and which is positioned below and hermetically connected to the mixing chamber; a mold reciprocably positioned in the open-bottomed chamber and adapted to be reciprocated with respect to an ingot being extracted therefrom and with respect to the chamber. A vessel of varying shape and made from an elastic material is connected to the open-bottomed chamber so as to maintain the pressure of the protective gas in the latter above the surface of the liquid metal in the mold at a height not exceeding 3 mm of water column.



3,833,051

HEAT EXCHANGE

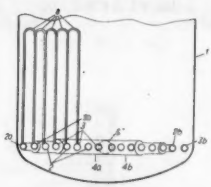
Charles Roger Frank, Stockton-on-Tees, England, assignor to Imperial Chemical Industries Limited, London, England

Filed May 22, 1972, Ser. No. 255,671

Claims priority, application Great Britain, June 23, 1971, 29393/71

Int. Cl. F28d *13/00*

U.S. Cl. 165—1 **3 Claims**



An arrangement of heat-transfer conduits for a fluidisation vessel comprising a bundle of "hair pin" U-tubes upstanding from interdigitating supply and discharge heaters for the tube bundle.

3,833,052

HUMIDIFYING UNIT

Philip Cardinal, Barrie, Ontario, Canada, assignor to Conat Industries Limited, Toronto, Ontario, Canada

Filed Mar. 27, 1973, Ser. No. 345,268

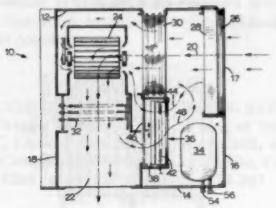
Claims priority, application Canada, Apr. 26, 1972, 140594

Int. Cl. F24f *3/14*

U.S. Cl. 165—20 **3 Claims**

This invention relates to an air conditioning unit comprising a housing, means defining a substantially L-shaped passage through said housing, said housing having an inlet and an outlet, an air blower in said housing, an air cooling evaporator and a compressor of an air cooling system, said air cooling evaporator being in said L-shaped passage, air heating means in said L-shaped passage, said air cooling evaporator being on the leg of said L-shaped passage adjacent said inlet of said L-

shaped passage, said air heating means being on the leg of said L-shaped passage adjacent said outlet of said L-shaped passage, said air blower being between said air cooling evaporator coil and said heating means, said compressor for said air cooling system being nested between the arms of said L-shaped passage.



3,833,053

INSTALLATION FOR THE CONDITIONING OF AIR

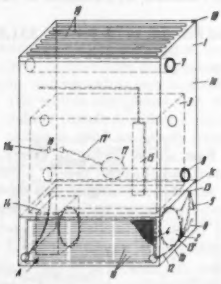
Erich Benteler, Heepen; Wilhelm Schirp, Bergneustadt-Hackenberg; Heinz Menne, Schloss Neuhaus; Otto Eckhardt, Bielefeld, and Wilhelm Mowe, Bad Salzuflen-Schotmar, all of Germany, assignors to Benteler-Werke Aktiengesellschaft, Bielefeld, Germany

Filed July 10, 1972, Ser. No. 271,342

Claims priority, application Germany, July 10, 1971, 2134619

Int. Cl. F24f *3/14*

U.S. Cl. 165—60 **18 Claims**



A first housing is provided, together with a similarly dimensioned second housing. Heat exchange elements are provided in the first housing for the purpose of conditioning the ambient air, and a humidifying arrangement is provided in the interior of the second housing and occupies a substantial portion of this interior.

3,833,054

RADIATOR OF THERMOPLASTIC MATERIAL

Erwin Gross, Burgsolms; Michael Rudbach, Hofheim/Taunus, and Hans Vowinkel, Florsheim am Main, all of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucuis & Bruning, Frankfurt am Main, Germany

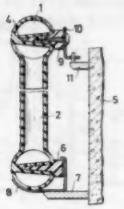
Filed May 2, 1973, Ser. No. 356,468

Claims priority, application Germany, May 5, 1972, 2221971

Int. Cl. F28f *9/26*

U.S. Cl. 165—67 **8 Claims**

A radiator of thermoplastic material having horizontal and vertical water channels is provided wherein narrow stiffening corrugations are molded at least in the back wall of the horizontal water channels and connected with the opposite wall, the corrugations containing holding elements for fixing the radiator at the wall of the building.



3,833,055

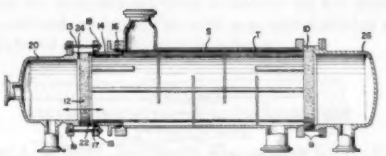
SHELL AND TUBE HEAT EXCHANGER

Frank G. Munz, and Robert W. Naidel, both of Lakewood, Ohio, assignors to Union Carbide Corporation, New York, N.Y.

Continuation of Ser. No. 49,804, June 25, 1970, abandoned. This application July 24, 1972, Ser. No. 274,612

Int. Cl. F28f *5/00*

U.S. Cl. 165—82 **2 Claims**



A shell and tube heat exchanger having a cylindrical shell and carbonaceous tubes held in place by a pair of carbonaceous tube sheets. According to the present invention, a fixed tube sheet is used at one end and a floating tube sheet is used at the opposite end. The floating tube sheet is located entirely outside of the shell and is axially spaced from the end thereof by an elongated metal skirt extending from within the shell into contact with the carbonaceous floating tube sheet. In addition, a packing material is used for sealing while also permitting sliding motion of the metal skirt. The metal skirt is held tightly in contact with the floating tube sheet by clamping means.

3,833,056

HIGH TEMPERATURE COOLING PROCESS AND SYSTEM

Robert E. McMinn, and Mickey B. Jamison, both of Oklahoma City, Okla., assignors to Black, Sivalls & Bryson, Inc., Oklahoma City, Okla.

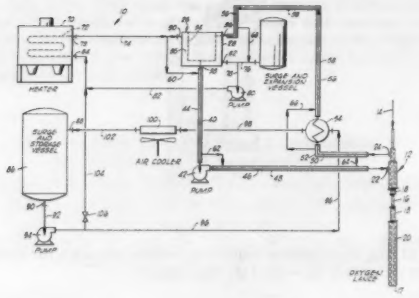
Filed Jan. 15, 1973, Ser. No. 323,996

Int. Cl. F28d *15/00*

U.S. Cl. 165—107 **13 Claims**

A process and system for cooling a device subjected to high temperatures wherein a stream of coolant is flowed through the device. The resultant heated stream of coolant is passed in heat exchange relationship with a cooled stream of liquid heat transfer medium so that a quantity of heat is removed from the coolant substantially equal to the heat removed from the

device. The stream of coolant is passed in heat exchange relationship with a heated stream of the liquid heat transfer medi-



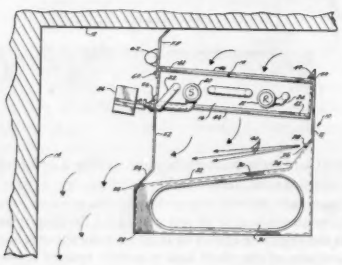
um so that the coolant is maintained at a desired temperature level and then the coolant is recirculated through the device.

3,833,057

INDUCED AIR COOLING AND HEATING SYSTEM

Robert P. Doherty, 1709 W. 8th St., Los Angeles, Calif. 90017

Filed June 14, 1972, Ser. No. 262,575
Int. Cl. F24f *3/02*
U.S. Cl. 165—123 **18 Claims**



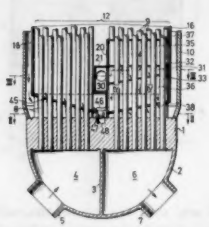
A system for heating and cooling multiple rooms includes a separate induced air heat transfer unit mounted adjacent to the ceiling in each room. Each unit includes a tubular cooling coil, a series of longitudinally spaced apart flat heat transfer fins mounted on the cooling coil, and an elongated, tubular plenum extending below the cooling coil. During the cooling cycle, chilled water is circulated through the cooling coil, and tempered air, i.e., fresh air which has been dehumidified below dew point, and preheated slightly above dew point (52°F.) in a remote central plant, is forced through the plenum. The tempered air is dispersed through slotted openings spaced along the length of the plenum to stimulate the natural convective flow of cool room air through the heat transfer unit. The supply and return pipes for the cooling coil in each room extend through the heat transfer fins and are coupled with a chiller in the central plant to provide continuous circulation of chilled water through the cooling coils. During the heating cycle, water circulation through the cooling coils is stopped, and tempered air is preheated in the central plant and forced through the openings in the plenum.

3,833,058

EVAPORATOR

Johann Gulich, Winterthur, Switzerland, assignor to Sulzer Brothers Ltd., Winterthur, Switzerland

Filed Apr. 9, 1973, Ser. No. 349,569
Int. Cl. F28b *9/22*
U.S. Cl. 165—161 **10 Claims**



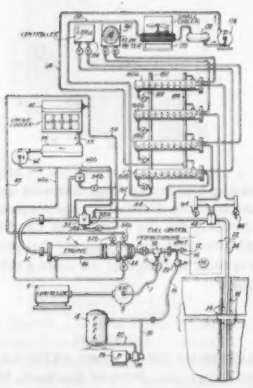
The evaporator is provided with a distributing chamber within the cold tube branches to receive an inflow of fluid to be evaporated. The chamber distributes the flow both downwardly and upwardly. The downward part-flow is directed to flow against the tubes-bottom and then into the outer annular space between the tank wall and guide wall. The flow then passes into the natural circulation flow and is distributed about the hot tube branches from below. The upward part-flow is directed into the interior of the guide wall to mix with the rest of the fluid.

3,833,059

HOT GAS APPARATUS FOR RECOVERY OF OIL VALUES

Purdy L. Sisson, Paducah, Ky., assignor to Motco Inc., Charlotte, Tex.

Filed Feb. 12, 1973, Ser. No. 331,892
Int. Cl. E21b *43/24*
U.S. Cl. 166—57 **8 Claims**



A hot gas process and apparatus for extraction of highly viscous oil from subterranean deposits which employs a rocket engine for generating hot gases which are conveyed into the interior of the oil well to heat the oil deposits. The rocket engine is supplied with compressed air and fuel through a control unit to regulate the pressure of the exhaust gases exiting from the engine. A back-pressure control valve and an orifice metering valve are connected in the exhaust conduit between the

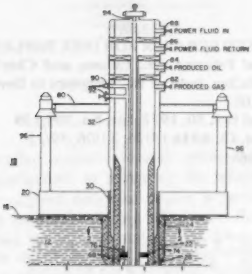
engine and oil well to control the pressure and flow of the exhaust gases into the well. A plurality of automatically controlled heat exchangers and cooling units are connected with the back-pressure control valves exhaust gas conduit, and orifice metering valve to maintain the exhaust gas temperature and back pressure at desired predetermined levels for high temperature operation, resulting in highly efficient operation and a low fuel consumption.

3,833,060

WELL COMPLETION AND PUMPING SYSTEM

Donald E. Craggs; Richard S. Gillen, both of Ventura, and Stephen C. Lipman, San Marino, all of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Filed July 11, 1973, Ser. No. 378,203
Int. Cl. E21b *43/00*
U.S. Cl. 166—68 **5 Claims**



A well completion and pumping system employing a free-type, hydraulic-drive, bottom-hole pump powered by a closed power fluid system, and providing separate means for producing gas and oil. The well is completed with three concentric fluid-carrying conduits installed within a production casing. The innermost circuit is used to supply power fluid to the pump, and the pump is placed in the well and recovered through this conduit. Power fluid exhaust from the pump engine is returned up the annulus between the center conduit and the next outer conduit, and the produced oil is pumped up the annulus between the second and third concentric conduits. The well annulus between the third conduit and the production casing is vented to recover gas, and hydraulic control piping and instrumentation cable is installed in this annulus on the exterior of the third conduit.

3,833,061

METHOD FOR SELECTIVELY REDUCING BRINE PERMEABILITY IN A SUBTERRANEAN OIL-WET FORMATION

James W. Gall, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 27, 1972, Ser. No. 318,848
Int. Cl. E21b *33/13*
U.S. Cl. 166—294 **9 Claims**

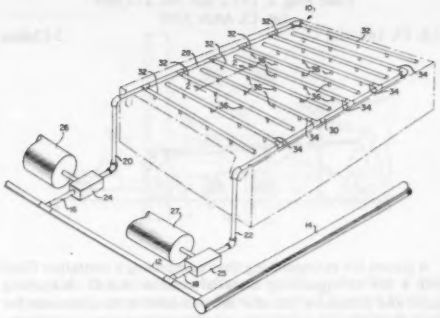
A method for selectively reducing the permeability of an oil-wet subterranean formation penetrated by at least one well bore by passing an oxidizing agent through and in contact with the formation for oxidizing and removing hydrocarbon from the surfaces of the formation and thereafter contacting the treated formation surfaces with a crosslinked polymer for selectively reducing the permeability of the formation to brine while maintaining the permeability of the formation to hydrocarbon fluids relatively unchanged.

3,833,062

SYSTEM AND METHOD FOR EXTINGUISHING FIRE

William L. Livingston, Sharon, Mass., assignor to Factory Mutual Research Corporation, Norwood, Mass.

Filed June 15, 1972, Ser. No. 263,249
Int. Cl. A62c *35/00*
U.S. Cl. 169—15 **26 Claims**



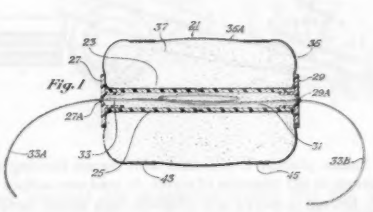
A system and method for extinguishing fires is provided which includes applying an aqueous solution of a gel-forming material to structures in an area to be protected and separately applying an aqueous solution of a gel-inducing material to the same structures so that the solutions will mix and form a blanket of gas impervious aqueous gel which flowingly envelopes the structures and tends to smother any fire therein. The preferred gel-forming material is polyvinyl alcohol and the preferred gel-inducing material is borax.

3,833,063

NONFRAGMENTING PYROTECHNIC FIRE EXTINGUISHER

Robert A. Williams, Fort Worth, Tex., assignor to Pyro Control, Inc., Fort Worth, Tarrant, Tex.

Filed Feb. 15, 1972, Ser. No. 226,792
Int. Cl. A62c *35/00*
U.S. Cl. 169—28 **9 Claims**

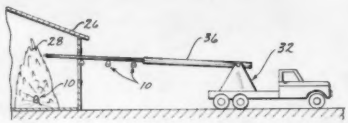


The specification discloses a pyrotechnic fire extinguisher comprising an explosive charge and a breakable cover forming a zone near the explosive charge for holding fire extinguishing powder. A heat sensitive metallic fuse extends to the explosive charge and has a portion thereof exposed to the exterior environment to sense for heat. Heat from a fire will ignite the fuse which in turn will cause the explosive charge to explode. This will cause the cover to break open and force the powder outward.

In one embodiment the explosive charge is held in a container which is grooved or notched selectively between its ends to prevent fragmentation of the container. Explosion of

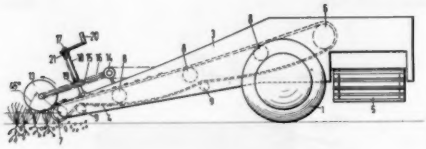
the charge causes the container to break open to direct the force of the explosion into the powder. In one embodiment the cover also is grooved selectively to facilitate breaking thereof and to prevent fragmentation when the charge is exploded.

3,833,064
MEANS FOR EXTINGUISHING FIRES
Joseph W. Ranney, Jr., Council Bluffs, Iowa
Filed Aug. 1, 1972, Ser. No. 277,089
Int. Cl. A62c *3/00*
U.S. Cl. 169—52 **3 Claims**



A means for extinguishing fires comprising a container filled with a fire extinguishing material such as A.B.C. A blasting agent and detonator therefor are provided in the container for exploding the container at a predetermined time so that the fire extinguishing material will be scattered over the fire to extinguish the same. The container may be manually thrown into the fire or it may be conveyed into the fire by means of a boom truck apparatus or the like. A modified form of the conveying apparatus is disclosed together with the container adapted for use therewith.

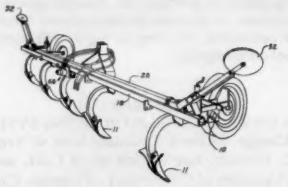
3,833,065
HAULM PLUCKER
Auko Hamminga, Siddeburen, Netherlands, assignor to Transportbandenfabriek E.A. Broekema B.V., Hellum, Netherlands
Filed Jan. 29, 1973, Ser. No. 327,760
Claims priority, application Netherlands, Jan. 27, 1972, 1102
Int. Cl. A01d *23/00*
U.S. Cl. 171—28 **11 Claims**



A haulm plucker is provided with means forming a nip transverse to the direction of travel. At least one surface leading to the nip is moved at a relatively high speed, thereby to cause haulm to be separated from potatoes or other tuberous crop with a sudden jerk, which the crop buried in the soil is unable to follow. In a preferred embodiment the speed is adjustable to the kind of soil and crop.

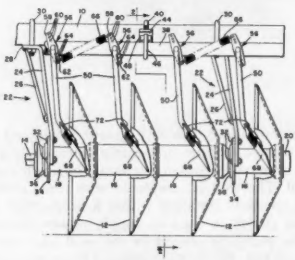
3,833,066
ROW MARKER
Lloyd A. Hitt, 6306 Raleigh Ave., Lubbock, Tex. 79414
Filed June 19, 1973, Ser. No. 371,419
Int. Cl. A01b *17/00*
U.S. Cl. 172—131 **16 Claims**

A track is clamped to a tool bar parallel thereto. A carriage in the track is reciprocated from one side to the other by a rack and pinion formed by a chain welded to the carriage and a sprocket operated by a hydraulic motor mounted on the track. A cam plate on the end of the carriage permits markers



to be folded down in the marking position and folded up in the carry position. Knee action permits the marker to flop backwards when an obstruction is struck.

3,833,067
SPRING BIASED SCRAPER FOR DISK IMPLEMENTS
Willard Emanual Peterson, Jr., Colona, and Charles Harold Youngberg, Moline, both of Ill., assignors to Deere & Company, Moline, Ill.
Filed Oct. 30, 1972, Ser. No. 302,139
Int. Cl. A01b *15/16, 23/06, 39/22*
U.S. Cl. 172—566 **5 Claims**



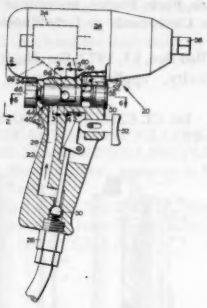
Scraper apparatus for the soil engaging disks on a disk implement, the apparatus including a plurality of scraper arms, one for each disk, pivotally mounted at their upper ends on a support member for movement of their lower ends toward and away from their associated disks. The support member is adjustably mounted on the implement frame to afford common adjustment of the scraper arms radially with respect to the disks. A scraper blade is mounted on the cylindrical lower end of each arm by means of a U-shaped bracket extending through an aperture in the blade and rotatably receiving the lower end of the arm, the bracket having a pair of outwardly flanged legs engageable with the blade to limit movement of the blade radially relative to the arm, and the arm having a stop pin engageable with the edges of a circumferential slot in the bracket to limit axial movement of the blade relative to the arm. Each scraper arm includes an upper and lower spring anchor disposed above and below, respectively, the axis of the pivotal connection of the arm and support, each anchor having a plurality of spring anchor points thereon disposed at varying radial distances from the pivot axis. A spring connects the lower anchor on one of the arms with the upper anchor on the immediately adjacent arm to bias the scraper blades on the lower ends of both arms toward their respective disks, the spring being adjustable on the spring anchor points to vary the force of the blades against the disks.

3,833,068

CONTROLLED POWER PNEUMATIC IMPACT WRENCH

Walter Dennis Hall, Portland, Oreg., assignor to Automotive Industrial Marketing Corporation, Portland, Oreg.

Filed July 26, 1973, Ser. No. 383,440
Int. Cl. B25b 21/00
U.S. Cl. 173—169 2 Claims



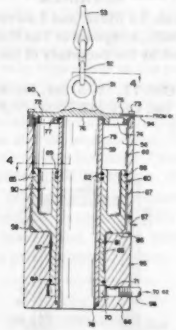
A controlled torque reversible pneumatic impact wrench for use particularly in mounting the wheels of automotive vehicles equipped with disc brakes is provided with an air regulating valve introducing differential flows of air to the rotor during the forward and reverse drive conditions of the wrench. In the reverse drive condition of the wrench full air pressure is applied. In the forward drive condition thereof, a restricted air volume is applied as required to develop a predetermined maximum torque.

3,833,069

IMPACT APPARATUS

Carl F. Back, Orrville, Ohio, assignor to The Sanderson-Cyclone Drill Company, Orrville, Ohio

Filed July 2, 1973, Ser. No. 375,508
Int. Cl. B25d 9/00; E02d 7/00
U.S. Cl. 173—120 2 Claims



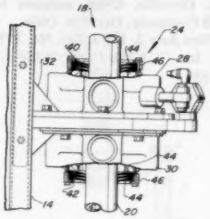
An impact apparatus, or driving tool for pipe or piling, with pneumatic-hydraulic actuation. The apparatus is selectively positioned relative to a surface or object to be impacted. The apparatus has a hammer barrel housing an anvil surface and a piston element. The piston element is reciprocated relative to the anvil surface by intermittent application of hydraulic pressure.

3,833,070

RESILIENT DRILL STRING GUIDE AND SEAL

Floyd R. Anderson, Quincy, Ill., assignor to Gardner-Denver Company, Quincy, Ill.

Filed Mar. 23, 1973, Ser. No. 344,372
Int. Cl. E21b 19/16
U.S. Cl. 173—164 4 Claims



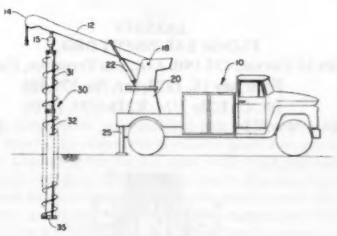
A guide or centralizer characterized by a plurality of radially inwardly projecting wire bristles formed in a ring brush assembly for engagement with the elongated drill string sections of a rock drilling apparatus. The resilient character of the brushlike guide prevents scoring or galling of the drill string section outer surface under heavy lateral forces tending to deflect the drill string. The brushlike guide also serves as a dust and rock chip seal for a joint breakout mechanism.

3,833,071

APPARATUS AND PROCESS FOR SOIL DEWATERING

Ronald L. Koosman, 7320 Minnetonka Blvd., St. Louis Park, and Norman E. Charlson, Jr., 1020 50th Ave. N.E., Minneapolis, both of Minn.

Filed May 3, 1973, Ser. No. 356,827
Int. Cl. E21b 3/02
U.S. Cl. 175—57 25 Claims



An improved soil dewatering process and well drilling method which utilizes support equipment for a hollow core auger and a drive unit for the same which will permit drilling of a test hole, a well hole, and insertion of a well casing into the soil at a desired well depth for the purpose of lowering a water table or pumping water from the ground. The hollow auger is utilized to house the casing after the hole is initially drilled and a suitable plug in the end of the same is disposable and will be removed therefrom as the casing is inserted to insure that the auger may be backed out of the ground leaving the casing therein. The casing is sealed and incorporates its own screening in the form of slits therein which permits entrance of water into the casing so that a submersible pump and riser may be inserted into the same for pumping purposes. A quick disconnect coupling is incorporated into the method and apparatus to enable ready coupling of plural auger sections to obtain desired depth of well, the coupling providing a

portion which will effect rotational thrust between sections and between the auger and the drive unit with a second portion overlapping the same and providing an axial coupling between parts to insure against separation of the same.

3,833,072
DRILLING MACHINE WITH DRIVING TOOL FOR CASING OR PIPE

Carl F. Back, Orrville, Ohio, assignor to The Sanderson-Cyclone Drill Company, Orrville, Ohio

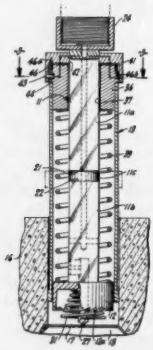
Filed July 2, 1973, Ser. No. 375,509
Int. Cl. F21b *19/00;* **B25d** *9/00*
U.S. Cl. 175—85 **5 Claims**

A drilling machine having a tower with drill power means movable lengthwise thereon and carrying drill pipe sections. The drilling machine carries a driving tool for casing sections or pipe. The driving tool has pneumatic-hydraulic actuation and is mounted to be positioned coaxially of a drill pipe section. The driving tool is used to impact a casing section relative to the drill pipe sections.

3,833,073
FLOOR TAP INSERT DRILL

Charles M. Carver, 435 19th Ave., San Francisco, Calif. 94121

Filed July 16, 1973, Ser. No. 379,586
Int. Cl. E21c *1/14;* **E21b** *9/36, 11/00*
U.S. Cl. 175—173 **13 Claims**

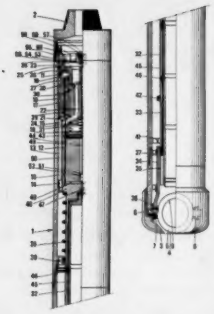


Drill for successively drilling holes of different diameters. A circular hole saw is affixed to one end of a shaft, and a cylindrical core bit is slidably mounted on the shaft and movable between extended and retracted positions relative to the hole saw. Means is provided for releasably locking the core bit in its extended position, and shift mechanism is provided for operating the lock means and moving the core bit between the extended and retracted positions.

3,833,074
REMOTELY ACTUATED DEVICE FOR SURVEYING UNDERGROUND STRATA

Lucien Courtois, Paris, France, assignor to Institut Francais du Petrole, des Carburants et Lubrifiants, Rueil-Malmaison, France

Filed Dec. 13, 1972, Ser. No. 314,527
Claims priority, application France, Dec. 17, 1971, 71.45655
Int. Cl. E21b *7/00, 25/00, 9/36*
U.S. Cl. 175—87 **23 Claims**

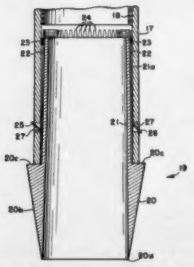


Device for taking cores of the ground formations at different levels of a well, adapted to be operated successively as a drilling apparatus and as a coring apparatus and comprising remotely controlled means for passing from drilling conditions to coring conditions and vice-versa by actuating a retractable plug member of the coring crown of the device by means of a variation of the flushing fluid pressure and/or a rotation of the device.

3,833,075
EXPENDABLE CORE NOSE AND CORE CATCHER RETAINER

Richard T. Bachman, La Mesa, and Lawrence R. O'Mara, San Diego, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 12, 1973, Ser. No. 405,995
Int. Cl. E21b *25/00, 9/20*
U.S. Cl. 175—20 **10 Claims**



An improved corer for taking a core sample of marine sediment is dropped onto and embedded in the ocean floor. Dur-

ing penetration, a core sample fills an elongate barrel member. As the corer is withdrawn, a tapered corer nose remains in the sediment while the elongate barrel member is pulled free. Simultaneously, a cylindrically shaped array of flexible fingers are drawn together by an elastic band to retain the core sample inside the barrel member. Since the flexible fingers are held outside of the path of the core sample as it enters the barrel member, there is no disturbance or commingling of the different layers of the core sample when it is being taken. A one-way valve and the flexible fingers cooperate to retain the intact core sample while it is being lifted to the surface to provide an undisturbed specimen for later study by marine geologists and oceanographers.

3,833,076

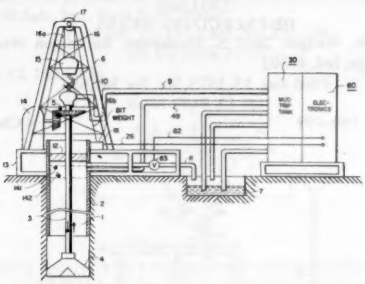
SYSTEM FOR THE AUTOMATIC FILLING OF EARTH BOREHOLES WITH DRILLING FLUID

Phil H. Griffin, III, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 231,679, March 3, 1972, abandoned. This application June 29, 1973, Ser. No. 375,261

Int. Cl. E21b *21/04*

U.S. Cl. 175—38 **5 Claims**



A drilling fluid tank has a float ball therein connected to one end of a flexible cable having a weight on its other end for contacting a pair of electrical switches in response to the movement of the float ball. The cable also has a plurality of spaced triggers for contacting a third switch providing electrical signals indicative of the incremental volumetric flow of mud from the tank into the well bore. Two pairs of solenoid actuated valves are logically responsive to the position of the float ball, to a deadline sensor indicative of hook load and to a paddle sensor located in the drilling fluid return line from the well bore, and automatically control the filling of the tank, the emptying of the tank and the amount of drilling fluid that is allowed to pass into the earth borehole. Electrical circuitry is also provided which measures the amount of fluid passing into the borehole and compares the measured amounts with preselected values and which causes alarms to be activated in the event that the actual fluid volume passing into the well bore falls outside the predetermined values.

3,833,077

DIAMOND DRILLS

Lionel Lavallee, Errington St., Chelmsford, Ontario, Canada

Filed Apr. 1, 1971, Ser. No. 130,387

Claims priority, application Canada, Feb. 12, 1971, 105265

Int. Cl. E21b *17/10;* **E21c** *9/00*

U.S. Cl. 175—325 **10 Claims**

A drilling section for diamond drills consisting of a drill bit and a reamer wherein the direction of the drill hole is controlled by the provision of cylindrical surfaces behind the cutting portion of the bit and the reamer, such cylindrical surfaces having a diameter which is slightly less than that of the cutting portion and the reamer. The outer surfaces of the drill

assembly including the cutting portion of the bit and the core bar may be provided with spiral grooves to assist the circulation of water.

3,833,078

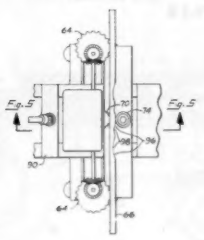
SHORT TURN VEHICLE

Ray Owen Chaney, and Emsley M. Chaney, both of Rural Rt. No. 2, Sidney, Ohio 45365

Filed Nov. 13, 1972, Ser. No. 306,043

Int. Cl. B62d *3/12*

U.S. Cl. 180—42 **13 Claims**



Steering mechanism comprising a pair of steerable wheels which are rotated by respective eccentric gears that are in turn rotated by a steering bar having gear tooth engaging surfaces which engage and drive the eccentric gears. The steering bar is reciprocated longitudinally by a pinion gear located between the eccentric gears and which is held in engagement with the steering bar by a retaining surface that abuts the opposite side of the steering bar from the pinion gear.

3,833,079

VEHICLE, ESPECIALLY MOTOR VEHICLE FOR AGRICULTURAL PURPOSES

Arno Gego, Aachen, Germany, assignor to Klockner-Humboldt-Deutz Aktiengesellschaft, Cologne, Germany

Filed Aug. 14, 1973, Ser. No. 388,229

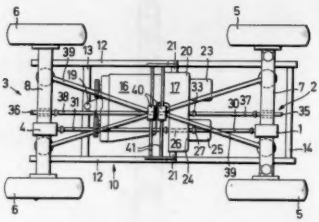
Claims priority, application Germany, Aug. 17, 1972, 2240415

Int. Cl. B60k *17/34*

U.S. Cl. 180—44 F **10 Claims**

A vehicle, especially for agricultural purposes, having a frame with front and rear axles resiliently supported therebeneath and with a driving unit in the frame in about the middle of the length of the frame. The driving unit includes an engine having the crankshaft extending in the fore and aft direction of the frame and offset laterally from the longitu-

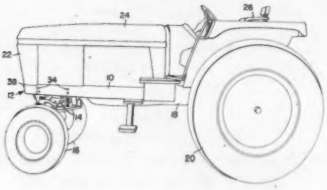
dinal center of the frame. A hydrostatic pump is connected to the crankshaft and a hydrostatic motor in circuit with the pump drives through a geared transmission to the axles. Wishbone shaped brace members have the free ends of the legs connected to the axles and extend in about the same horizontal plane to the longitudinal center of the frame and are pivotally connected to the frame near the center thereof.



3,833,080
TRACTOR FRONT END CONSTRUCTION

Norman Frederick Lemmon, Cedar Falls, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Apr. 5, 1973, Ser. No. 348,182
Int. Cl. B62d 5/10
U.S. Cl. 180—79.2 R 5 Claims



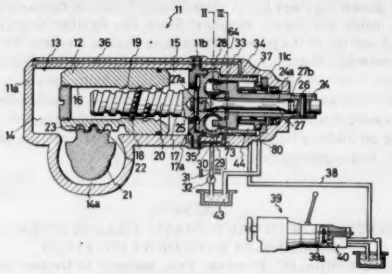
A front end construction for an agricultural tractor or like vehicle comprising a unitary support mounted between the forward ends of the tractor frame and provided internally with chambers housing the hydraulic steering motor for the vehicle front wheels and provided externally with mounting portions for carrying additional tractor-related components.

3,833,081
FLUID POWER STEERING MACHINE

Akira Suzuki, Nishio, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Aichi Pref., Japan

Filed Aug. 11, 1972, Ser. No. 279,776
Claims priority, application Japan, Aug. 26, 1971, 46-65366
Int. Cl. B62b 1/00
U.S. Cl. 180—79.2 5 Claims

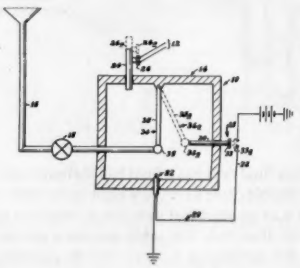
A fluid power steering mechanism for a vehicle comprising an operating rod operably connected with dirigible wheels through an actuator, a manually operable steering shaft coaxially with said operating rod and elastically connected with the same through a resilient means, a control valve means provided in said operating rod and operating said actuator by relative rotational displacement of said operating rod and steering shaft and a resistant means whereby said resistant means are communicating with a fluid pressure source generating a pressure in response to the vehicle speed and obtaining a steering resistance in response to the vehicle speed for a steering wheel cooperably connected to said steering shaft.



3,833,082
DE-ENERGIZING MEANS

Harry R. Wenger, 2607 S. Manhattan, Burlington Woods, Muncie, Ind. 47302

Filed Aug. 13, 1973, Ser. No. 387,685
Int. Cl. B60k 27/08
U.S. Cl. 180—99 4 Claims



Automatic de-energizing means for vehicle starter circuitry, in which the vehicle is provided with a chamber into which a person may blow a specimen of his breath; and there is an auxiliary ignition means having a sparking component in the chamber means, with activation means to cause it to spark, thus providing that if the breath specimen in the chamber means is of sufficiently high alcohol content it will explode and thereby de-energize the vehicle's starter circuitry.

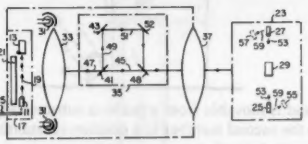
3,833,083
DETECTION OF ABSENCE OF CONCENTRATION AND COHERENCE IN A SUBJECT

Horst Kunig, R.D. No. 1, Saltsburg, Pa. 15681

Filed Jan. 8, 1973, Ser. No. 321,689
Int. Cl. B60k 27/08
U.S. Cl. 180—99 5 Claims

Absence of concentration and coherence in a subject is detected by evaluating the success which the subject has in moving a first object into engagement with a second object over a path which permits the first object to deviate from direct movement to the second object. The moving operation which the subject carries out is not directly visible to the subject; he

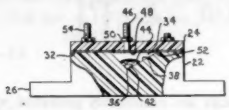
sees only direct and reverse images of the movement which merge when the second object is engaged by the first object. Deviations from direct movement appear oppositely on the direct and reverse images and the images cannot be coordinated by a subject lacking concentration and coherence. The invention is applied to the movement of a connecting mechanism to energize the ignition of an automotive vehicle. A drunken driver would be unable to effect this movement and start the vehicle successfully.



3,833,084
ATTITUDE RESPONSIVE SWITCH FOR VEHICLE SAFETY SYSTEM

Kent Doud Henderson; Kenneth T. Henderson, both of Filer, and Leon E. Smith, Jr., Twin Falls, all of Idaho, assignors to Tilt-Safe, Inc., Twin Falls, Idaho

Filed Jan. 12, 1973, Ser. No. 323,380
Int. Cl. B60k *27/08*
U.S. Cl. 180—104 **7 Claims**



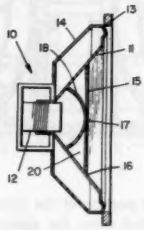
Safety apparatus for a self-propelled vehicle disables the engine of the vehicle if the critical angle of pitch or roll is approached during vehicle operation. An attitude responsive switch senses the position of the vehicle, and employs a reservoir containing a small quantity of mercury. The reservoir is formed in a body of insulating material, and may be of an inverted, irregular cone shape presenting a sidewall that diverges from a vertical axis to a degree depending upon the critical angles of pitch and roll. When a critical angle (less a safety factor) is reached, the mercury gravitates along the sidewall to the edge of the reservoir and bridges a pair of contact elements that define a narrow, annular space therebetween extending completely around the edge. In diesel engine applications, closing of the switch effected by bridging the elements energizes a solenoid operated fuel shut-off valve to kill the engine.

3,833,085
LOW-FREQUENCY LOUD SPEAKER

Norman Leonard Thomasen, 760 Market St., Suite 315, San Francisco, Calif. 94102

Filed Mar. 21, 1974, Ser. No. 453,512
Int. Cl. H04r *7/00*; **G10k** *13/00*
U.S. Cl. 181—32 R **3 Claims**

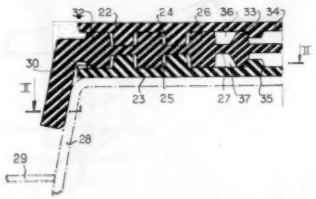
A low-frequency loudspeaker overcoming a tendency to provide excessive midrange acoustic output. A circular attenuator disk of a low-density material is secured axially to and covers the central radiating surface area of the loudspeaker's conical diaphragm, being attached adhesively at its periphery to the diaphragm at a circle spaced inwardly from the outer periphery of the diaphragm. The disk is also attached at its center to the support dome for the loudspeaker, and it lies substantially in a single plane, thereby forming an airtight chamber between the disk and the diaphragm. As a result, the excessive midrange acoustic output efficiency is dissipated within the chamber, only the excessive midrange acoustic output efficiency being attenuated, and this is done without altering the electro-magnetic circuit properties of the loudspeaker. The loudspeaker's acoustic output performance is thereby brought to a substantially uniform level over its entire operating range.



3,833,086
SOUND AND VIBRATION INSULATING PANEL

Andre Giraudeau, 3 Rue de La Republique, 95160 Montmorency, France

Filed Aug. 10, 1972, Ser. No. 279,519
Claims priority, application France, Aug. 10, 1971, 71.29241
Int. Cl. E04b *1/84*
U.S. Cl. 181—33 A **3 Claims**



A sound and vibration insulating panel is made of an elastomer material and includes upper and lower plates with annular ridges lying opposite one another. When assembled on an intermediate member having annular ridges on both faces, the two plates have their respective ridges interdigitating the ridges of the intermediate member.

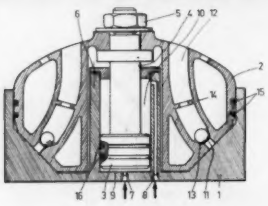
3,833,087
DEVICE FOR GENERATING ACOUSTIC WAVES BY IMPLOSION

Jacques Cholet, Rueil-Malmaison, France, assignor to Institut Francais du Petrole, des Carburants et Lubrifiants, Rueil-Malmaison (Hauts-de-Seine), France

Filed Jan. 11, 1972, Ser. No. 216,962
Claims priority, application France, Jan. 19, 1971, 71.1719
Int. Cl. G01v *1/02*
U.S. Cl. 181—.5 H **17 Claims**

Device for generating acoustic waves by implosion comprising two stationary cylinders, two pistons solid with each other and each slidably mounted each in a separate cylinder but with different strokes so that one piston can be placed, by acting on the other piston, in a position of disengagement from the closed portion of its cylinder. A sealing arrangement is provided for insulating the last-mentioned cylinder from the

external medium as long as its piston is not disengaged from the closed portion thereof. Intermittent communication

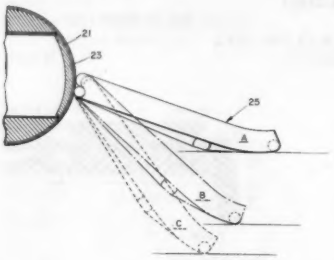


between said closed portion of the cylinder and the external medium is established when the piston is displaced in said closed portion towards the bottom thereof.

3,833,088
SLIDE-RAFT FOR EMERGENCY AIRCRAFT EVACUATION

Joseph Nmi Chacko, Corte Madera; Ronald H. Day, Mill Valley, and Robert S. Satterfield, Pleasant Hill, all of Calif., assignors to Sargent Industries, Inc., Los Angeles, Calif.

Filed Oct. 18, 1972, Ser. No. 298,563
Int. Cl. A62b 1/20; B65g 11/10
U.S. Cl. 182—48 **27 Claims**



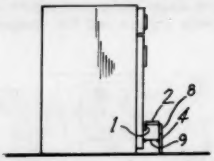
An evacuation device which inflates automatically upon opening of the door of an aircraft unless predetermined actions are accomplished before the door is opened. The device comprises individually operable and pneumatically distinct upper and lower inflation tube assemblies which support a slide surface therebetween across which persons jumping from the aircraft may slide to ground level. A canopy is provided which may be fastened across the slide surface so that the device can be utilized as a raft in an aircraft ditching situation. If desired, the capacity of the raft can be increased by the provision of sponsons integral with each of the inflatable tube assemblies and extending laterally therefrom.

3,833,089
FOLDABLE STEP STOOL

James Backwell, Kitchener, Ontario, Canada, assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed June 19, 1973, Ser. No. 371,465
Int. Cl. E06c 9/06
U.S. Cl. 182—91 **1 Claim**

A foldable step stool adapted to be affixed to an upright surface for providing access to a height above the stool comprises a first member adapted to be affixed to an upright surface. A second member is hingedly affixed to the upright surface and is movable from a position substantially coplanar with the first member to a position at substantially right angles to the first member. A third member is hingedly affixed to the second

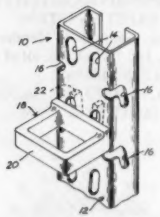


member and is movable from a position substantially perpendicular to the second member to a position substantially parallel to the second member.

3,833,090
SETTABLE LUGS FOR CLIMBING RACKS

Rodney A. Georgianna, 320 Bridge, Ashland, Oreg. 97520

Filed Aug. 29, 1973, Ser. No. 392,435
Int. Cl. E06c 7/08
U.S. Cl. 182—92 **3 Claims**



Warehouse racks are commonly provided which include upright posts of sheet metal having numerous slots in their faces and sides for the reception of longitudinally extending and transversely extending shelf supporting bars. The shelves may be located at various heights up to 8 feet or even more for the temporary storage of merchandise. Fork lifts are generally used for placing merchandise on the higher storage shelves and for transferring the merchandise from higher to lower shelves. Merchandise is generally withdrawn from the lower shelves for filling orders with the aid of manually propelled or automotive vehicles. There are many instances, however, where merchandise, particularly on the lower shelves, could be more conveniently withdrawn if provision is made for enabling a stock clerk to climb the rack, at least, partway, and manually transfer merchandise, either directly or through an associate, from the rack to such a vehicle. To this end, the present invention provides lugs which can be transferably applied to the racks to serve usefully as steps and/or hand-holds as convenience may require. The lugs provided are desirably sufficiently numerous to avoid the need for frequent transference of lugs from one location to another.

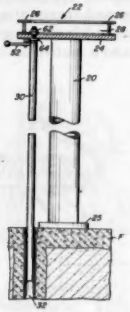
3,833,091
SAFETY MECHANISM FOR AUTOMOBILE LIFTS

Roger MacPherson, 148 Mibank St., Rochester, N.Y. 14619

Filed Apr. 9, 1973, Ser. No. 348,882
Int. Cl. B66f 7/18
U.S. Cl. 187—8.49 **5 Claims**

A rod is mounted to move with the piston or plunger of the lift. This rod is slabbed off at diametrally opposite sides; and it is reciprocable in the bore of a collar fixed in the floor of a garage. The collar has two balls in it which ride in diametrally opposite grooves in the collar, that have downwardly converging outer surfaces. Normally the balls ride on diametrally arcuate cylindrical surfaces of the rod to lock the rod in any elevated position. When the rod is rotated, however, to bring the slabbed off portions of the rod into engagement with the

balls, the rod is released. The rack and the automobile thereon may be lowered to floor level. A handle is provided to rotate the rod. When the handle is released a coil spring returns the



rod automatically to locking position; and the lift is locked in any position to which it has been raised. The only manual motion required of this device is to unlock it. The lock remains unlocked as the lift is lowered.

3,833,092

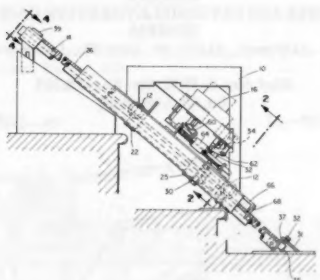
TRANSPORT MECHANISM FOR STAIRWAY ELEVATOR

Henry K. Flinchbaugh, York, Pa., assignor to Flinchbaugh/Murray Corporation, York, Pa.

Filed Apr. 4, 1973, Ser. No. 347,846

Int. Cl. B66b *9/06*

U.S. Cl. 187—12 **9 Claims**



A drive nut is mounted at one end of a load distributing carriage through which passes a threaded shaft which is fixed against rotation and engaged with said nut. The nut is rotationally driven about the shaft to cause the carriage to move up or down the shaft. An additional nut is carried by the shaft and connected to the drive nut for movement therewith. The additional nut is unloaded and provides a safety stop in the event of failure of the drive nut.

3,833,093

CYCLIC ENERGY ABSORBER

William Henry Robinson, Eastbourne, New Zealand, assignor to New Zealand Inventions Development Authority, Wellington, New Zealand

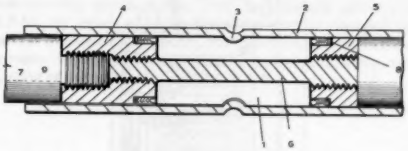
Filed Dec. 21, 1972, Ser. No. 317,431

Claims priority, application New Zealand, Dec. 22, 1971, 165897

Int. Cl. F16f *7/12*

U.S. Cl. 188—1 C **9 Claims**

An energy absorber for incorporation in bridges or buildings which must withstand earthquakes or other vibratory forces. It has two concentric members which in action move longitudinally relative to each other as the structure vibrates. At one point of its length one of the members is shaped such that the annular space between the members forms an orifice.



The space between the members is filled with lead. The forcing of the lead through the orifice absorbs energy, while the subsequent recovery and recrystallization returns the material nearly to its original state.

3,833,094

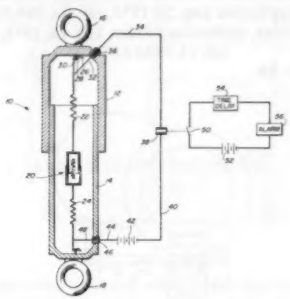
SHOCK ABSORBER WARNING SYSTEM

Sidney Grossman, 180 Samoset Ave., Quincy, Mass. 02160

Filed Feb. 5, 1973, Ser. No. 329,402

Int. Cl. F16d *63/00*

U.S. Cl. 188—1 A **5 Claims**



An alarm system is provided for use on motor vehicles to monitor the condition of the vehicle's shock absorbers. The system includes a spring-loaded switching device mounted to each shock absorber and connected through a circuit to an alarm such as a light or buzzer which may be installed on the vehicle's dashboard. The switching device closes if the shock absorber telescopes beyond its normal operating range.

3,833,095

HYDRAULIC POWER BRAKE SYSTEM

Thomas H. Engle, Cape Vincent, N.Y., assignor to General Signal Corporation, Rochester, N.Y.

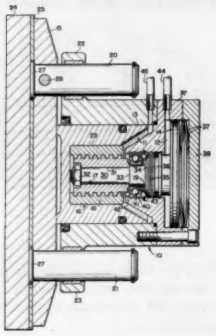
Filed Mar. 5, 1973, Ser. No. 337,977

Int. Cl. F16d *55/02*

U.S. Cl. 188—71.9 **13 Claims**

A hydraulic power brake system is disclosed having a brake actuator housing containing service and hand brake pressure chambers and pistons for actuating a brake head. An automatic adjuster is provided connecting the two pistons comprising two cooperating members connecting the pistons. A first of the members is permitted substantial rotary movement and limited axial movement and a second of the cooperating members is permitted axial movement but not rotary movement. A

spring such as a wave washer is used for yieldably permitting greater axial movement of the first member when brakes are



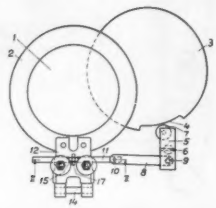
applied by actuation of the hand brake piston than when brakes are applied by actuation of the service brake piston.

3,833,096

MECHANICAL BRAKE FOR TAP CHANGERS

Sivert Norman, Ludvika, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Continuation of Ser. No. 220,154, Jan. 24, 1972, abandoned. This application Aug. 20, 1973, Ser. No. 389,564
Claims priority, application Sweden, Feb. 11, 1971, 1713/71
Int. Cl. F16d *63/00*
U.S. Cl. 188—85 **1 Claim**



A mechanical brake for the driving device of a tap changer includes a brake disc and cooperating brake shoes. A control disc driven simultaneously with the brake disc has two parts of different radius, the higher parts of which can engage against a roller journalled on a lever which is pivoted on the shaft which controls the contact device supplying current to the driving motor. The roller carrying lever also has pivoted to it a link connected to a control rod which passes between the brake shoes and has thinner and thicker parts. Rollers journalled on the brake shoes engage this rod, so that when it is moved in either direction from a median position by the rocking of the lever it pushes the brake shoes apart and releases the braking action.

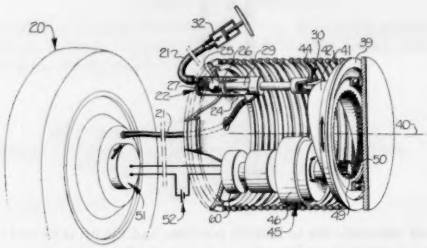
3,833,097

ANTI-LOCKING ARRANGEMENT FOR FLUID PRESSURE ACTUATED BRAKE

Jan-Olov Holst, Laduvagen 12, Uppsala, Sweden

Filed Sept. 26, 1973, Ser. No. 400,960
Int. Cl. B60t *8/12*
U.S. Cl. 188—181 A **24 Claims**

In a fluid pressure actuated brake for slowing a rotating member and having a conduit through which actuating pressure is applied and a valve interposed in the conduit for controllably interrupting the application of pressure, locking of the brake is prevented by an arrangement in which forces are exerted on a mass including a flywheel supported for oscillating movement by a spring which biases the flywheel toward a central position, a coupling operatively interconnecting the flywheel and the valve and transmitting force opposing the spring force which is derived from the application of actuating pressure to the valve, and a motive device controllably exert-



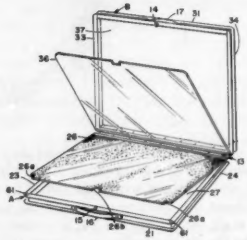
ing a force opposing the spring force. By controlling application of the last mentioned force, in response to the sensed rate of the retardation of or tendency to lock the rotating member, oscillation of a vibrating system defined by the mass and spring is initiated and maintained only during such time as the sensed rate of retardation exceeds a desired predetermined rate and such oscillating movement of the vibrating system including the mass is employed to interrupt the application of pressure to the brake.

3,833,098

MULTIPLE USE REVERSIBLE CARRYING CASE AND SYSTEM

Willis H. Alderman, 11287 W. 26th Pl., Lakewood, Colo. 80215

Filed Aug. 7, 1972, Ser. No. 278,205
Int. Cl. A45c *9/00*
U.S. Cl. 190—11 **18 Claims**



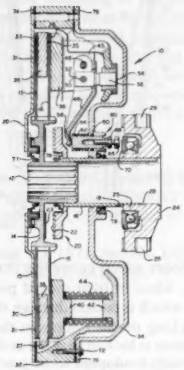
A highly versatile reversible carrying case is comprised of at least two sections hinged for swinging movement from a closed position forming an attache-type carrying case to turn fully inside out or be held at a selected angle relative to one another so that an inner panel portion with a smooth, hard, planar inner utility surface of each section becomes exposed for a variety of uses including as a miniature desk, lecturn, display board, projector screen, light table and the like. At least one of the sections has an inner storage compartment formed therein with the inner panel portion being movable to provide access into the inner storage compartment. The sections are releasably fastened in the closed position and each have a retractable handle for carrying purposes. The inside surfaces of the compartment are used for light reflection or as a projector screen surface.

3,833,099

SEALED OIL FILLED CLUTCH WITH BRAKE MEANS TO INHIBIT ROTATION UPON DISENGAGEMENT

Donald F. Linn, Manlius; Carl D. Bush, Solvay, and Frederick P. Taylor, Bridgeport, all of N.Y., assignors to Like-Rollway Corporation, Syracuse, N.Y.

Filed Feb. 5, 1973, Ser. No. 329,636
Int. Cl. F16d *67/02*
U.S. Cl. 192—13 R **1 Claim**



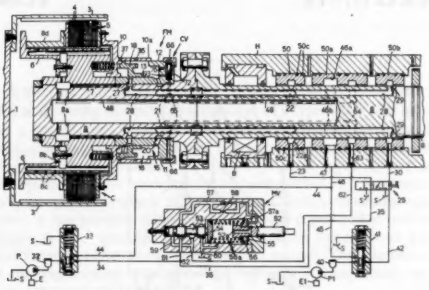
A brake is disposed within a rotating oil tight assembly of a heavy duty friction clutch. The brake has friction surfaces which engage to inhibit the rotation of a driven shaft upon disengagement of the clutch.

3,833,100

CONTROL SYSTEM FOR A POWER TRANSMISSION CLUTCH

George R. Aschauer, Racine, Wis., assignor to Twin Disc, Incorporated, Racine, Wis.

Filed Jan. 2, 1973, Ser. No. 319,989
Int. Cl. F16h *3/44*
U.S. Cl. 192—85 **8 Claims**



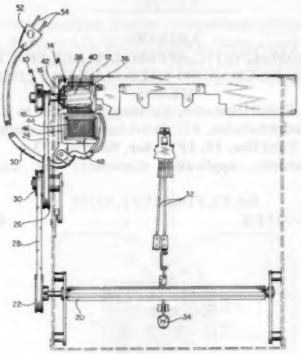
A control system for a fluid operated clutch, which system includes an actuating chamber for the shiftable clutch actuating piston, and which chamber has a floating ring therein that divides the chamber into two separate chamber portions. Clutch actuating high pressure fluid is admitted to both of the chamber portions, each chamber portion having a separate pressure fluid source. Both of the chamber portions are pressurized at the same time so that in the event one of the sources of fluid pressure or its fluid line leading to its chamber portion become inoperative, the clutch can still be maintained in full engagement by means of the other pressurized chamber portion. This positive clutch engagement is used for operation of a water craft for example, at high speeds say over 1,800 R.P.M. The control system also provides a centrifugally operated valve on the output side of the clutch and fluid pressure is directed to the centrifugal valve by means of an operator control modulating valve. This centrifugally operated valve and its modulating control valve are used at lower or maneuvering speeds of the craft, for example under 1,800 R.P.M., by means of which the clutch can be clamped up in various degrees, that is to say, the clutch can be modulated to provide various degrees of slipping and consequently, transmission of the power through the clutch.

3,833,101

TYPEWRITER MOTOR CLUTCH

William Pozella, and Henry D. Chaplin, Jr., both of Cortland, N.Y., assignors to SCM Corporation, New York, N.Y.

Filed Feb. 8, 1973, Ser. No. 330,554
Int. Cl. F16d *43/284*
U.S. Cl. 192—105 CF **2 Claims**



Posts are formed integrally with a plastic disk for a pivotally mounting centrifugal weights on the face of the disk. The posts have flanges on their free ends and slots in their free ends for snap retaining the centrifugal weights on the posts. The centrifugal weights are each formed integrally in one piece and have clutch dogs as thick as the centrifugal weights. For engagement with the clutch dogs, at least one tooth at least as thick as the clutch dogs is formed on a sleeve. The sleeve is connected to a pulley and both are composed of glass reinforced nylon.

3,833,102

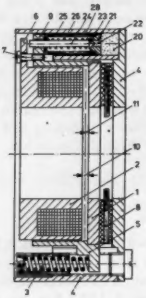
FLUID OPERATED AUTOMATIC WEAR TAKE-UP ADJUSTING DEVICE FOR ELECTROMAGNETIC, SPRING LOADED, FRICTION ENGAGING MECHANISM

Karl Stahle, Friedrichshafen, Germany, assignor to Zahnradfabrik Friedrichshafen AG, Friedrichshafen, Germany

Filed Dec. 18, 1972, Ser. No. 316,072
Claims priority, application Germany, Dec. 24, 1971, 2164542
Int. Cl. F16d *27/00, 29/00*
U.S. Cl. 192—111 A **11 Claims**

Displacement of the magnetic body of a spring engaged, friction brake or clutch, is automatically adjusted for releasing operation by a valve controlled fluid pressure resisting stop device. Movement of a spring loaded armature in response to

wear of a friction disc engaged therewith, displaces a piston confining a pressurized body of fluid by opening of a valve



from which a valve rod extends to form a limit stop engaged by the magnetic body that is displaced by the armature in one direction.

3,833,103

ELECTROMAGNETIC, SPRING LOADED FRICTION ENGAGING MECHANISM WITH FLUX GAP LIMITING MEANS

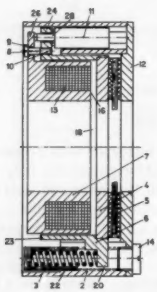
Karl Stahle, Friedrichshafen, Germany, assignor to Zahnradfabrik Friedrichshafen, AG, Friedrichshafen, Germany

Filed Dec. 18, 1972, Ser. No. 316,073

Claims priority, application Germany, Dec. 23, 1971, 2164134

Int. Cl. F16d *65/52, 65/56*

U.S. Cl. 192—111 A **6 Claims**



Increase in the flux gap spacing between the magnetic body and armature of an electromagnetic spring loaded, friction engaging mechanism, is limited to a maximum permissible distance by a mechanical coupling between the magnetic body and an axial guide to which the armature is connected. A wear take-up device automatically adjusts distance advanced by the magnetic body toward the armature during release of the friction engaging mechanism.

3,833,104

VANDAL-PROOF CENTRAL COIN RECEPTACLE

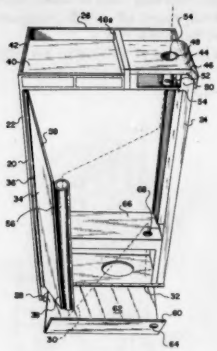
Robert Blum, Short Hills, N.J., assignor to The Coin Security Corp., Hillside, N.J.

Filed Aug. 10, 1973, Ser. No. 387,464

Int. Cl. G07f *9/06*

U.S. Cl. 194—1 B **10 Claims**

A vandal-proof central coin receptacle for controlling more than one coin operated machine is provided which includes a receptacle or cabinet-like member housing means for controlling coin operated machines coins. The receptacle is pro-



vided with two doors which cover the front portion thereof, and are adapted, when in their closed position, to engage a rod-like member which is passed through the top of the receptacle, thereby locking the two doors in their closed position. The rod-like member is locked in place at the top of the receptacle by a lock which is adapted to be positioned in a housing which is connected to the top of the receptacle in a manner such that it is virtually impossible to break open the lock by means of a crow-bar, hammer or other devices usually employed by vandals. In an alternative embodiment of the invention, the lock as well as the housing which surrounds the lock is completely enclosed in a safe-like member which is also provided with locking means.

3,833,105

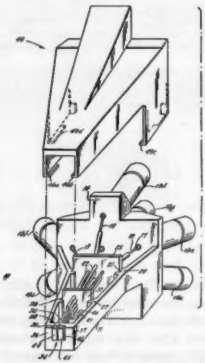
PRINTER HEAD ASSEMBLY

Robert Howard, Roslyn, N.Y., assignor to Centronics Data Computer Corp., Hudson, N.H.

Continuation of Ser. No. 37,815, May 15, 1970, abandoned. This application Sept. 10, 1971, Ser. No. 179,457

Int. Cl. B41j *3/10, 1/18*

U.S. Cl. 197—1 R **8 Claims**



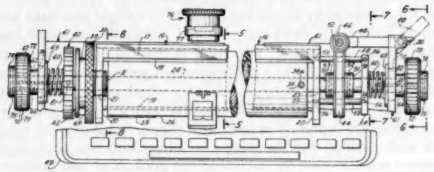
A printer head assembly for use in high speed printers of the dot-matrix type. The assembly is comprised of a one-piece die cast member having a bevelled rear wall which forms a truncated pyramidal shape for mounting the driving solenoids. The

print wires extend diagonally inwardly together with a centrally mounted solenoid, which print wire extends along the longitudinal axis of the printer head assembly housing whereby the print wires are ultimately aligned along the front surface thereof so as to lie along an imaginary straight line in very closely spaced fashion. Guide means are provided for imparting the appropriate curvature to the print wires in the region where they extend from the front to the rear surfaces of the housing. A jewel bearing provided along the front surface serves as a low-friction mounting of the reciprocating print wires and to prevent abrasive wear of the print wires when in the retracted position. The solenoid construction is of such a design as to be extremely lightweight and capable of high speed operation so as to cooperate with the printer head assembly to provide a compact, lightweight design adapted to be moved at high rates of speed across a paper document.

3,833,106
MICROSCOPIC SYMBOLS GAUGING SYSTEM FOR TYPE BAR ALIGNMENT

Seyed Khalil, Hotel Embassy, 154 W. 70th St., New York, N.Y. 10023

Filed Sept. 23, 1971, Ser. No. 183,108
Int. Cl. B41j *1/00*
U.S. Cl. 197—1 R **2 Claims**



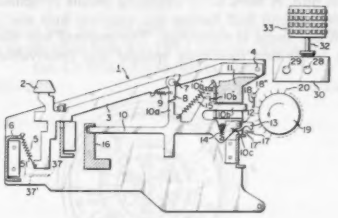
A microscopic symbols gauging system and scale therefor, said scale being mounted in a carriage of a typewriter and having a transparent section, upon which is formed a series of gauges having a predetermined sequence and spacing, each of said gauges representing both one of the symbols of a typewriter and the background of said symbol. To automatically gauge the symbols of a typewriter, their impressions are typed in the predetermined sequence on a paper rolled over a platen in said carriage and then the typed impressions are positioned beneath their corresponding gauges. The alignment of the impressions relative to their gauges is transversely exposed through said gauges.

3,833,107
TYPEWRITER

Koh Matsuhisa, Nimomiyamachi, Kanagawa-ken, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed Nov. 13, 1972, Ser. No. 305,874
Claims priority, application Japan, Nov. 13, 1971, 46-90707; Nov. 17, 1971, 46-92215; Nov. 17, 1971, 46-92216
Int. Cl. B41j *23/04*
U.S. Cl. 197—18 **6 Claims**

A typewriter of the type in which keys on a keyboard are divided into at least a first and second key groups, wherein a torque bar is provided which is actuated in response to the depression of a key belonging to for example the first key

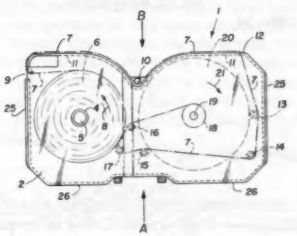


group so that a type or character selecting mechanism is lifted in order to bring the desired character on a typing member to the typing position.

3,833,108
INK RIBBON CARTRIDGE HAVING REMOVABLE SPOOLS

Niklaus Von Daeniken, Zurich, Switzerland, assignor to Messrs. Franz Buttner AG, Egg b. Zurich, Switzerland

Filed Sept. 12, 1972, Ser. No. 288,260
Claims priority, application Germany, Sept. 15, 1971, 2145985
Int. Cl. B41j *33/14*
U.S. Cl. 197—151 **16 Claims**



The present ribbon cartridge permits the insertion of a ribbon into a writing machine and the subsequent removal of the empty cartridge from the writing machine. For this purpose the cartridge is provided with ribbon guide means which correspond to the ribbon guide means of the writing machine whereby upon insertion of the cartridge with the ribbon into the writing machine the ribbon is transferred from the guide means in the cartridge to the guide means in the writing machine. The cartridge further includes a bottom with open ended apertures for insertion into the writing machine and with releasable interlocking means whereby the empty cartridge may be removed from the writing machine.

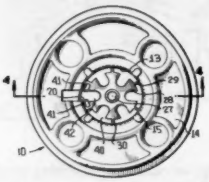
3,833,109
UNIVERSAL TYPEWRITER RIBBON SPOOL

Walter David Landgraf, 9228 S. Kildare Ave., Oak Lawn, Ill. 60453

Filed Mar. 17, 1971, Ser. No. 125,179
Int. Cl. B41j *35/00*; B65h *75/18*
U.S. Cl. 197—175 **4 Claims**

Internal and external hubs are provided with a ribbon retaining flange fixed to each to form respective first and second spool halves with the hubs fitting together in a telescoping manner and with first and second drive engaging

means on opposite sides of the spool to properly engage at least two types of typewriters. Both drive engaging means are preferably formed on the first spool half that includes the internal hub. A third drive engaging means or spline is formed on the second half having the external hub and is exposed when the spool is separated. The internal hub has a central bore to fit one mounting spindle and removable sleeve to



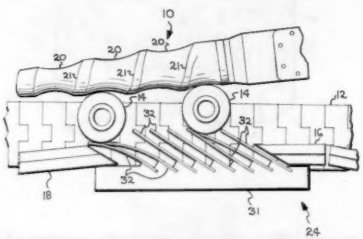
reduce the bore to fit a smaller spindle. The internal hub presents axially extending radial arms frictionally engaging the inside of the external hub; opposed axially extending tabs on two arms receiving the spline on the external hub to rotatably fix the spool halves together. The first spool half is molded plastic and the second spool half is metal for improving the frictional holding interface and for reinforcement.

3,833,110

ARTICLE-SPACING HELIX ASSISTOR

Darius O. Riggs, Ottawa Lake, Mich., assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Oct. 20, 1972, Ser. No. 299,351
Int. Cl. B65g 47/26
U.S. Cl. 198—34 **10 Claims**



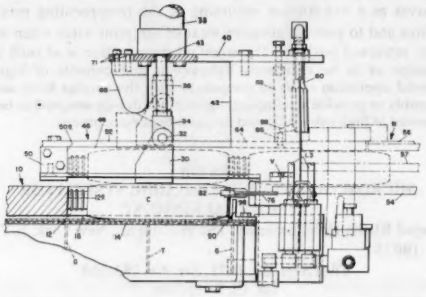
Apparatus for holding articles in contact with an article-spacing helix and for preventing retrograde motion of the articles while in contact with the helix. Articles such as cans or bottles are frequently placed in a uniformly-spaced single file by a rotating helix, which engages the articles one-at-a-time and advances them through the helix. The articles are furnished to and removed from the helix by a moving, endless conveyor. In order to hold the articles in contact with the helix and to prevent any rearward slippage of the articles once contact has been made, a restraining means is provided opposite the helix. The restraining means may be a plurality of equally spaced sheets of a resilient material angled in the direction of flow of the articles and extending into the path of travel of the articles. As the articles contact the sheets, the sheets bend in a cantilevered mode and exert a force toward the helix, keeping the article in contact with the helix. The sheets then return to their normal, unstressed condition after the article passes. If an article slips and attempts to move backward, the sheet over which it had previously passed will contact the article edge on. The sheet has substantial resistance to bending from forces applied to its edge, and thus will restrain the article from reverse travel until it can again properly engage the helix.

3,833,111

CONTAINER-ORIENTING APPARATUS

Walter S. Sterling, Quincy, and Robert W. Vergobbi, Braintree, both of Mass., assignors to Pneumatic Scale Corporation, Quincy, Mass.

Filed Apr. 23, 1973, Ser. No. 353,749
Int. Cl. B65g 47/24
U.S. Cl. 198—255 **15 Claims**



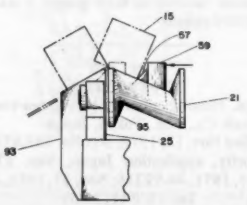
Apparatus for receiving containers from a mass of containers and disposing them with their open ends upright comprising a rotor containing regularly spaced pockets peripherally thereof for movement along a predetermined circular path within which the containers are deposited in prone positions for movement along said path onto a straddle rail. The pockets are open at the top and bottom so that containers deposited in the pockets when moved onto the rail are allowed to tilt downwardly within the pockets to upright positions and to be conducted along the path and marshalled in single line for further processing. The rotor is rotated continuously to present each pocket to a predetermined position for filling and there is a platform beneath the rotor which constitutes a bottom for the pocket at that position and a power-operable, reciprocably mounted presser foot supported above the rotor at said position for thrusting containers into the pockets in timed relation with the arrival of the pockets at said position. A receiver is supported above the rotor to which the containers are supplied in succession and the reciprocable presser foot is arranged to eject containers from the receiver into the pockets.

3,833,112

APPARATUS FOR CLAMPING AND DISCHARGING WORKPIECE

John L. Parris, Knoxville, and Herman J. Oldham, Oak Ridge, both of Tenn., assignors to The Carborundum Company, Niagara Falls, N.Y.

Division of Ser. No. 114,913, Feb. 12, 1971, Pat. No. 3,712,605. This application Sept. 13, 1972, Ser. No. 288,838
Int. Cl. B65g 47/24
U.S. Cl. 198—283 **8 Claims**



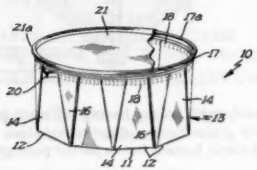
In a workpiece clamping and discharging device for a frame, a work-engaging member is journaled for rotation about a ver-

tical axis adjacent the workpiece. As the work-engaging member is turned, an inclined surface thereon which is spaced from the axis of rotation slidably contacts the workpiece to push the workpiece upwardly and outwardly. Further turning of the work-engaging member causes an abutment at the upper portion of the inclined surface to engage the workpiece thereby laterally urging the workpiece across the frame so as to clamp or discharge the workpiece.

3,833,113
COLLAPSIBLE CONTAINER

James Osier, 3786 Hwy. 194, Duluth, Minn. 55811

Filed Dec. 14, 1972, Ser. No. 315,142
Int. Cl. B65d *17/16, 85/00*
U.S. Cl. 206—4 **3 Claims**

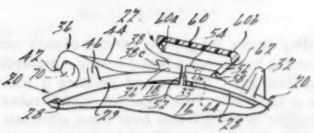


A disposable collapsible container adapted to contain a food product, such as a sandwich or the like, and being formed of an impervious non-metallic material, such as paperboard. The container includes a bottom wall having an upstanding peripheral wall secured thereto and the container is of generally cylindrical configuration. The peripheral wall is made up of wall sections interconnected by pairs of flaps which are normally folded together. In one embodiment, a tear strip is provided for the peripheral wall and when removed allows the peripheral wall to be collapsed and expanded to form the container into a plate-like receptacle. In another embodiment, removal of the cover member allows collapsing of the container into a plate-like receptacle.

3,833,114
ONE PIECE SEALING RING

Boris M. Osojnak, 512 Roanoke Dr., Birmingham, Mich. 48010

Filed Oct. 4, 1971, Ser. No. 186,014
Int. Cl. B65d *85/67;* **B65h** *75/02*
U.S. Cl. 206—53 **6 Claims**



A sealing ring for use with a computer tape reel wherein the ring is formed as an integral molded strip having a stiff arcuate portion adjacent one strip end with a radius of curvature approximating that of the reel, and a generally flexible portion extending from the stiff arcuate portion; the stiff portion is built up adjacent its free end to provide an integral keeper structure for coaction with an overcenter latch assembly secured to the free end of the flexible portion, and the radially outer face of the stiff portion is moldingly configured to provide a hook structure adjacent the keeper structure for hanging storage of the ring and encircled reel.

3,833,115
CLINICAL PROBE AND DISPOSABLE SHEATH

Richard L. Schapker, 134 Farnum St., North Andover, Mass. 01845

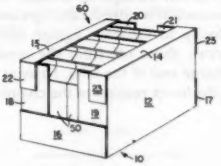
Continuation of Ser. No. 228,990, Feb. 24, 1972, abandoned. This application June 15, 1973, Ser. No. 370,480
Int. Cl. B65d *85/38;* **G01k** *7/00*
U.S. Cl. 206—306 **1 Claim**

Disposable sheath in combination with a clinical probe, the sheath, comprising a frame defining an aperture large enough to admit the probe and an elastic membrane fixed to the frame and covering the aperture, so that upon a forceable insertion of the probe through the aperture the membrane will stretch by at least 100 percent along the probe axis to conform to the probe surface to be sheathed. The probe includes inner spring-biased retainers that hold the sheath on the probe by said frame, with a movable actuator that ejects the sheath from the probe upon actuation.

3,833,116
PACKAGE OF CONTAINERIZED GOODS

William J. Howe, Los Altos, Calif., assignor to Georgia-Pacific Corporation, Portland, Oreg.

Division of Ser. No. 883,216, Dec. 18, 1969, Pat. No. 3,704,823. This application Sept. 1, 1972, Ser. No. 285,557
Int. Cl. B65d *79/00*
U.S. Cl. 206—431 **1 Claim**



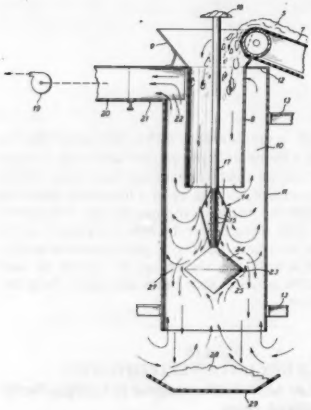
A package of containerized goods, a packaging method, and a crate-like carton. The carton has a mostly-open top wall and partly-open front and rear walls, with closed bottom and side walls, all made from a single, continuous, generally rectangular blank of corrugated board. The vertical side walls are hinged to the bottom wall, and a top reinforcing horizontal wall portion is hinged to each of the side walls. Front and rear flaps are attached to each of the bottom, vertical and top walls. The flaps hinged to the bottom wall have a median height no more than half the height of the side walls and are secured to the flaps that are hinged to the side walls, which are

substantially less than half as wide as the bottom wall. Also secured to these flaps are the flaps from the top wall, which are narrower than the flaps secured to the side walls. In one form of the invention, the top-wall flaps meet the bottom-wall flaps along a diagonal line. The containers, whether single-tiered or plural-tiered, substantially fill the carton, and individual containers can be taken out through the top of the carton without having to open it. During packaging, the carton is brought snugly around the containers, and this snugness strengthens the carton walls during subsequent stacking of cartons.

3,833,117
PNEUMATIC REFUSE MATERIAL SEPARATION SYSTEM

Harold B. Mackenzie, Wheaton, Ill.; Ingvar G. Anderson, Dunedin, and William T. S. Montgomery, Jr., Jacksonville, both of Fla., assignors to New Life Foundation, Wheaton, Ill.

Filed Jan. 29, 1973, Ser. No. 327,420
Int. Cl. B07b *4/02*
U.S. Cl. 209—3 **16 Claims**



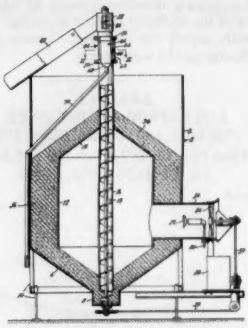
Light and heavy constituents of refuse material are separated by delivering the material through a tubular inlet into the upper portion of a vertical separating chamber to drop onto and past declumping means and then to a spreader which directs it to fall through an annular venturi throat. As the material descends it is subjected to upwardly moving air of substantial velocity to separate lighter constituents of the material and draw them off from the separating chamber above the discharge end of the inlet. Heavier constituents are collected from the lower portion of the chamber spaced below the spreader.

3,833,118
GRAIN CLEANING DEVICE

Merwin W. Gilmore, Clay Center, and Robert C. Chaffee, Green, both of Kans., assignors to Gilmore-Tatge Manufacturing Co. Inc., Clay, Kans.

Filed Dec. 21, 1972, Ser. No. 317,262
Int. Cl. B07b *7/06, 7/086*
U.S. Cl. 209—28 **8 Claims**

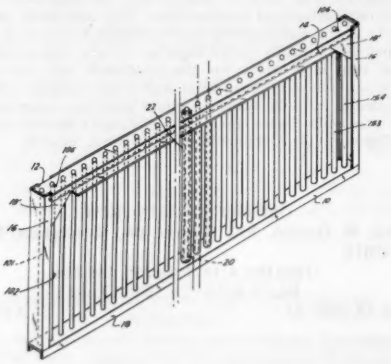
A grain cleaning device for removing "fines" such as broken kernels, hulls, dust and the like from grain, including a tube through which grain is moved with a whirling motion and in an elevated air pressure, the tube having an opening to the atmosphere at its periphery obstructed by a perforated screen, so that the fines are removed from grain through said opening by both centrifugal force and by air flow. The screen is interchangeable with others having different perforation sizes, for use with grains having other kernel sizes, so as to prevent passage of whole kernels but to permit passage of fines.



3,833,119
GRADING APPARATUS

Robert B. Brown, Rt. 1, Valley Head, Ala. 35989

Filed June 25, 1973, Ser. No. 373,450
Int. Cl. B07b *13/04*
U.S. Cl. 209—99 **7 Claims**



A grading device for grading various objects including live fish according to size has a frame having a multiplicity of elements spaced apart therein and defining a multiplicity of passages in the frame. Superimposed outside tubes or sleeves are insertable into the frame over these elements to change the size of these passages without having to remove the frame from operative use. Also claimed is a fish growing crate consisting of four juxtaposed devices of this type.

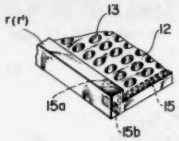
3,833,120
RUBBER SCREEN FOR A VIBRATING SIEVE

Nobuo Ogata, No. 1-5, 5-chome, Ohmachi, Kamakura City, Japan

Continuation-in-part of Ser. No. 34,654, May 5, 1970, abandoned. This application Aug. 16, 1972, Ser. No. 280,946
Int. Cl. B07b *1/46*
U.S. Cl. 209—399 **9 Claims**

A rubber screen for use in a vibrating sieve for separating smaller particles of a substance from larger particles thereof,

which screen comprises a body having a plurality of apertures and containing reinforcing members embedded therein and



oriented laterally to the flow direction of the substance being sifted. An abrasion-resistive coating may be applied to one or both surfaces of the rubber screen.

3,833,121

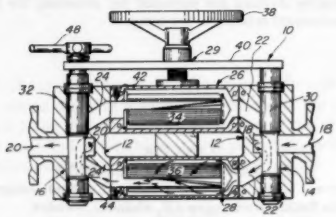
PLASTIC FILTRATION SYSTEMS

Jack S. Singleton, Sparta, and William McCaffery, Jr., Denville, both of N.J., assignors to Brunswick Corporation, Skokie, Ill.

Filed Sept. 2, 1971, Ser. No. 177,351

Int. Cl. B01d *35/12*

U.S. Cl. 210—91 **21 Claims**



A plastic filtration system for use with plastic extrusion machines is described. The filtration system comprises a pair of diverter spool valves incorporating special spool slots, ports, seals and seats for high pressure, high temperature applications, a pair of parallel filters in housings which permit easy removal and cleaning, and means for synchronously operating the diverter valves to prevent rapid changes in pressure drop through the system.

3,833,122

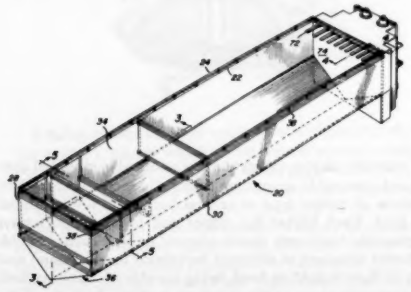
FLOATING CHEMICAL FEEDING AND CHEMICAL PROCESS PLANT FOR WATER PURIFICATION

Donald F. Cook, Apartado Aereo 2987, Cali, Colombia

Filed June 9, 1971, Ser. No. 151,187

Int. Cl. B01d *21/08*

U.S. Cl. 210—207 **2 Claims**



A chemical process plant for water purification and a pure water storage tank are provided which may be floated in a river, lake, reservoir or other body of water which serves as the source of supply. Each structure is comprised of a flotation collar with a rigid support frame and an enclosure made of lightweight, relatively inexpensive materials such as flexible fiberglass reinforced plastics.

3,833,123

FILTERS

Alan John Walker, 387 Maidstone Rd., Wigmore, Gillingham, Kent, England

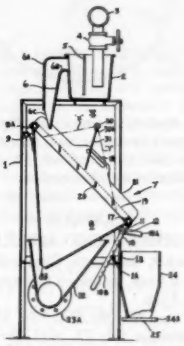
Continuation of Ser. No. 116,586, Feb. 18, 1971, abandoned.

This application Feb. 16, 1973, Ser. No. 333,015

Claims priority, application Great Britain, Feb. 18, 1970, 7754/70

Int. Cl. B01d *33/22*

U.S. Cl. 210—241 **19 Claims**



An inclined screen filter comprising a perforate and substantially flat screen having means to supply a flow of fluid material to be filtered to the outwardly sloping face of the screen whence it falls for collection, in which means are provided to reduce the adherence of the filtrate held thereon by surface tension forces so that it falls free of the screen.

3,833,124

IMMERSION TYPE STRAINER

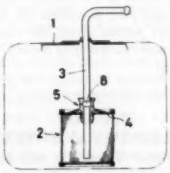
Masaaki Sugiyama, Fuji, and Akira Mizusawa, Fujisawa, both of Japan, assignors to Nifco Inc., Tokyo and Yamakawa Industry Company Ltd., Fuji-shi, both of, Japan

Filed Oct. 3, 1973, Ser. No. 403,146

Claims priority, application Japan, Oct. 4, 1972, 47-114534

Int. Cl. B01d *29/00*

U.S. Cl. 210—460 **5 Claims**



Disclosed is an improved immersion type strainer which is suitable particularly for use in a fuel tank of an automobile. The unique design of the pipe and associated female piece assures a loose-free connection between the pipe and the filter housing even if the strainer is subjected to continuous vibration or recurrent impacts.

3,833,125

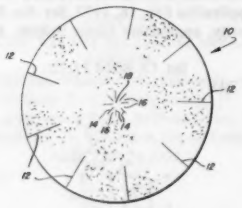
UNIVERSAL COFFEE FILTER

Harlan A. Schwartz, Manitowoc, Wis., assignor to Schwartz Manufacturing Company

Continuation-in-part of Ser. No. 89,616, Nov. 16, 1970, Pat. No. 3,719,282. This application Mar. 6, 1973, Ser. No. 338,607The portion of the term of this patent subsequent to Mar. 6, 1990, has been disclaimed.

Int. Cl. B01d *35/28*

U.S. Cl. 210—477 **6 Claims**



A coffee filter element having a plurality of short, non-intersecting slits adjacent its center, said slits converging toward a tab portion at the center of the filter. The filter can be used in a dripolator or percolator coffee maker.

3,833,126

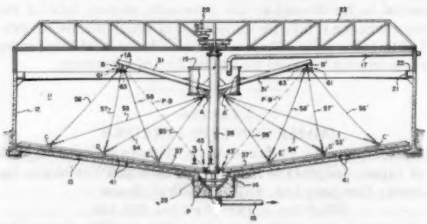
SEDIMENTATION APPARATUS

Bernard J. Schochet, Salt Lake City, and Peter J. Bsumek, Midvale, both of Utah, assignors to Envirotech Corporation, Salt Lake City, Utah

Continuation of Ser. No. 201,316, Nov. 23, 1971, abandoned. This application July 23, 1973, Ser. No. 381,368

Int. Cl. B01d *21/18*

U.S. Cl. 210—531 **1 Claim**



An elevated boom draws a submerged blade-carrying rake arm in rotation about a vertical column to which the rake arm is connected by a coupling having but a single pivot axis and that axis is directed towards the outer end of the boom; the rake arm, when in motion, is pulled by draft means which fasten at spaced-apart points along the arm which converge therefrom to a common connecting means mounted near the outer end of the boom.

3,833,127

DRYER FOR LAUNDRY AND OTHER OBJECTS

Wolfgang Schoen; Rainer Friedrich, and Johannes Lierscher, all of Nassau/Lahn, Germany, assignors to Leifheit International Gunter Leifheit KG, Nassau/Lahn, Germany

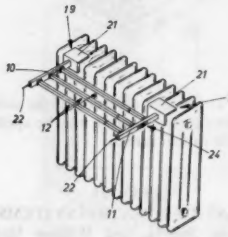
Filed Oct. 3, 1972, Ser. No. 294,606

Claims priority, application Germany, Oct. 5, 1971, 2149658

Int. Cl. A47f *5/00*

U.S. Cl. 211—86 **13 Claims**

A pair of tranversely spaced arms are connected by several hanger members from which objects to be dried may be hung. These hanger members may be of two telescopable sections each. Free end portions of the arms each carry a suspending unit composed of an abutment bracket of L shape which is rigid with the arm and a hook which has an extension portion



of rod shape guided in a bore of the arm so that the hook can be slit longitudinally as well as turned with reference to the arm. Arresting devices are provided for arresting the hooks against movement relative to the arms.

3,833,128

ROTATABLE DISPLAY CABINET

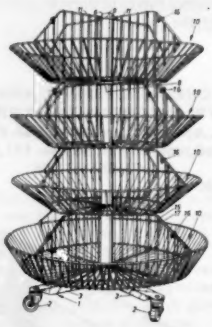
Tom Sumner, Wraysbury, near Staines, England, assignor to Moderna Butiksinredningar AB, Molndal, Sweden

Filed Jan. 23, 1973, Ser. No. 326,095

Claims priority, application Sweden, Feb. 8, 1972, 1485/72

Int. Cl. A47f *3/14, 5/02*

U.S. Cl. 211—131 **4 Claims**



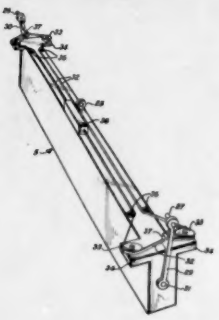
A rotatable display cabinet having a rotatably mounted central post removably supporting essentially sector-shaped shelf members of basket type at several horizontal levels around said post. Each basket has upper and lower support stays merging into transverse pieces adapted to be secured in holding hooks arranged at different horizontal levels around said post, each such holding hook being capable of receiving both the transverse piece of the upper stays of one basket and the transverse piece of the lower stays of the basket positioned immediately above the first-mentioned basket.

3,833,129

OVERHEAD OR GANTRY CRANE WITH A YOKE CARRYING ELECTROMAGNETS

Eigil Madsen, Svestrup Pr. Olstykke, Denmark, assignor to H. Nielsen & Son Maskinfabrik A S, Herlev, Denmark

Division of Ser. No. 138,706, April 29, 1970. This application May 21, 1973, Ser. No. 362,554
Int. Cl. B66c *17/04*
U.S. Cl. 212—14 5 Claims



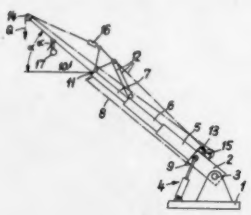
Overhead or gantry cranes have generally a crab or trolley from which the yoke is suspended. Instead of the crab which cannot bring the yoke all out to the legs of the crane now a yoke is applied carried by four rope parts from independently operated pulleys at each of the four crane corners.

3,833,130

SAFETY DEVICE FOR A TOP BOOM PIVOTALLY MOUNTED ON A CRANE BOOM

Werner Gerdes, Langendamm, and Otto Koster, Isums, both of Germany, assignors to Fried. Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany

Filed Apr. 20, 1973, Ser. No. 353,138
Int. Cl. G08b *21/00*; B66c *13/16*
U.S. Cl. 212—39 R 5 Claims



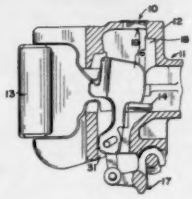
A safety device for a top boom pivotally mounted on a main boom of a crane, in which a first control system arranged on the top boom of the crane includes an angle indicator, a power indicator, a rated value indicator and a comparing device, and in which a second control system arranged on the main boom or the crane upper structure includes a source of constant current and a decoding device. The first and second control systems are electrically connected to each other only by one conductor and the mass of the main boom and of the top boom.

3,833,131

COUPLER LOCKLIFT HOLE CAP

Russell George Altherr, Munster, Ind., assignor to AMSTED Industries Incorporated, Chicago, Ill.

Filed Nov. 19, 1973, Ser. No. 417,245
Int. Cl. B61g *3/04*
U.S. Cl. 213—158 6 Claims



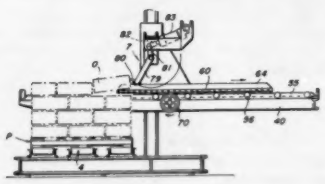
A coupler having a housing including a top locklift hole sealed by a removable cap. The cap is made from plastic and includes a cover plate overlying and sealing the hole. The cover plate is formed with an outwardly projecting bubble having a plurality of angularly spaced legs. Upon depressing the bubble inwardly the legs wedgingly engage the inwardly diverging side walls defining the locklift hole. The cap is removable only by force applied upwardly through the locklift chamber to return the bubble to its outwardly projecting condition thereby to release the legs from the side walls.

3,833,132

PALLET LOADING APPARATUS

Frank P. Alduk, 116 Guadalcanal Rd., New Castle, Pa. 16105

Continuation-in-part of Ser. No. 854,930, Sept. 3, 1969, abandoned. This application Apr. 20, 1972, Ser. No. 245,842
Int. Cl. B65g *57/22*
U.S. Cl. 214—6 G 20 Claims



An apparatus for loading objects on a pallet has a cross frame movable vertically between upright supports. There is a shuttle table over the cross frame movably carried on it for travel from a load-receiving position at one end of the frame to a load-discharge position at the other end with means for traversing it back and forth. A restraining bar movable from a position where it is clear of the load when the table moves forward to a position over the pallet, but which obstructs the load as the shuttle table moves back, causes the load to be forced off the table onto the pallet or partially-formed load already on the pallet. One layer is deposited on the load with each forward and back cycle of the shuttle table. When the load is complete the cross frame is raised to a level above the load to clear the loaded pallet which is then removed, but at all other times the cross frame surrounds the load at or near its top to guard against accidental toppling of the load. An improved restraining bar is on dead center when it is in loadrestraining position with the pivotal axis about which it moves between load-restraining and load-clearing position so that the back thrust of the load against the bar is not transmitted to the bar-moving mechanism.

3,833,133

RACK STRUCTURE WITH MOBILE FRAMES HAVING TILTABLE BUCKETS

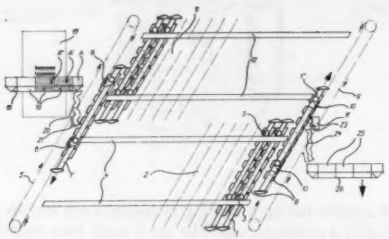
Egger Friedrich, Niederuzwil, Switzerland, assignor to Gebrueder Buehler AG, Uzwil, St. Gallen, Switzerland

Filed July 27, 1973, Ser. No. 383,052

Claims priority, application Switzerland, Aug. 10, 1972, 11823/72

Int. Cl. B65g 1/06

U.S. Cl. 214—16.4 C 17 Claims



A rack has pairs of substantially horizontal rails supporting a plurality of mobile supporting frames, for pasta products, which are arranged in the rack in two stacks. Each frame includes a plurality of superposed and individually tiltable buckets. The upper stack comprises empty frames and the lower stack comprises filled frames. An elevator means at one side of the rack moves the frames one by one downwardly from the upper stack to the lower stack with each bucket being filled with pasta products as it moves past a filling device. An elevator means adjacent the opposite side of the rack moves the frames one by one upwardly past a bucket emptying device for discharge of the bucket contents to a conveyor or the like. While the frames may be moved manually along the rails, stepping means preferably are provided to operate in synchronism with the other apparatus elements to shift the frames one by one along the respective rails. As each bucket is tilted to empty its contents, its pouring lip moves along a baffle to prevent falling out of the contents until the pouring lip is aligned with a hopper for receiving the discharged contents.

3,833,134

SILO DISCHARGING DEVICE

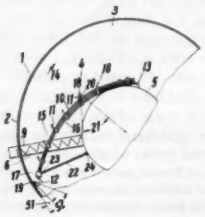
Hans Gessler, Aalen, Germany, assignor to Schwabische Hutenwerke Gesellschaft mit beschrankter Haftung, Wasseralfingen, Germany

Filed Dec. 20, 1971, Ser. No. 209,801

Claims priority, application Germany, Dec. 22, 1970, 2063140

Int. Cl. B65g 65/48

U.S. Cl. 214—17 D 31 Claims



A silo discharging device with a rotor in a silo container, which rotor has at least a resilient rotor arm, especially a rotor arm composed of spring leaves, in which the rotor arm extends with all radii of curvature of the rotor arm in a direction opposite to the direction of rotation of the rotor.

3,833,135

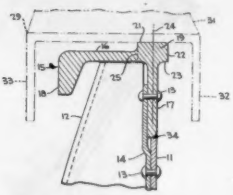
OPEN TOP RAILWAY FREIGHT CAR HAVING BULB ANGLE ELEMENT ALONG TOP EDGE OF SIDEWALLS

Glen D. Larsen, Upper Marlboro, Md., assignor to Southern Railway Company, Washington, D.C.

Filed May 2, 1973, Ser. No. 356,500

Int. Cl. B65g 67/24

U.S. Cl. 214—64.2 2 Claims



An open top railway freight car having a bulb angle element joined by welding or riveting along the top edge of each of its sidewalls, each element being so designed as to concentrate one-half the resultant vertical loads of a shakeout machine resting thereon in direct vertical alignment with each sidewall thereby substantially avoiding a weakening of the joint between each element and the car sidewalls during a shakeout operation. Such a design of each element includes a built-up portion extending upwardly and inwardly along the corner thereof, the inwardly extending built-up portion also serving to space the inner leg of the foot members of the shakeout machine away from the riveted joint between the bulb angle elements and the car sidewalls during the shakeout operation.

3,833,136

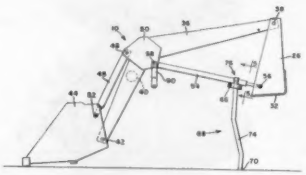
DETACHABLE FRONT END LOADER

Dalton Harold Spicer, Welland; George Francis Perdue, Lowbanks, and William Roderick MacGregor, Welland, all of Ontario, Canada, assignors to Deere & Company, Moline, Ill.

Filed July 3, 1972, Ser. No. 268,434

Int. Cl. B66f 9/04

U.S. Cl. 214—131 A 13 Claims



A front end loader adapted for releasable attachment to an agricultural tractor and having apparatus for facilitating removal of the loader from the tractor and for supporting the loader when so removed, the apparatus including an upright, rigid are pivotally connected at its lower end to the tractor frame and at its upper end to the loader arm, the arm extending upwardly and rearwardly from its lower to its upper pivotal connection and being swingable forwardly relative to the tractor as the latter is moved rearwardly relative to the loader, whereby the arm is operative to raise and then lower the

loader as the tractor is moved rearwardly. A U-shaped parking stand is pivotally connected to the loader for movement between a raised inoperative position and a lowered operative position, the stand in the latter position being operative to engage the ground and support the loader relative thereto as the loader is lowered by the arm.

3,833,137

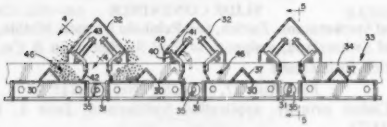
DISCHARGING HOPPER FOR GRAIN DRYER

Bernard C. Mathews, P.O. Box 70, Crystal Lake, Ill. 60014

Filed July 9, 1973, Ser. No. 377,391

Int. Cl. B65g *65/44;* **F26b** *17/26*

U.S. Cl. 214—17 D **2 Claims**



A grain dryer has imperforate side and end walls, two horizontal grain supports, and a series of exhaust ducts above the upper grain support. Each grain support has valve means to transfer periodically a controlled amount of grain downwardly from the upper to the lower grain support and from the lower grain support to a discharge means. A blower supplies hot air which passes up through the upper grain support to heat the bed of grain supported thereby, and cool air which passes through both grain supports. Level responsive means maintains a free space beneath the upper grain support. The two valve means operate only when the air supply is cut off.

3,833,138

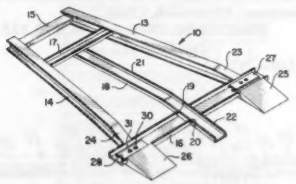
MEANS AND METHOD FOR STORING AIRCRAFT

Charles W. Dean, 2942 Palm Ave., Fort Myers, Fla. 33903

Division of Ser. No. 175,514, Aug. 27, 1971, Pat. No. 3,756,419. This application Apr. 17, 1973, Ser. No. 351,950

Int. Cl. B60b *29/00*

U.S. Cl. 214—334 **11 Claims**



A means and method for storing aircraft comprising support frame means and lifting frame means or pallet means for supporting and storing an aircraft on said frame means. Said frame means is capable of accommodating one aircraft therein, as well as supporting another aircraft thereon in vertically spaced relationship to said one aircraft. A plurality of support frame means and pallet means may be provided for supporting a plurality of aircraft in spaced, stacked relationship.

3,833,139

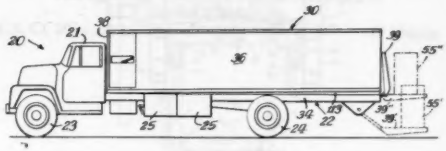
CARGO TRANSPORTING AND HANDLING VEHICLE

James D. Mahoney, 4 Ivy Ln., Oak Brook, Ill. 60521

Continuation-in-part of Ser. No. 132,319, April 8, 1971, abandoned. This application Oct. 30, 1972, Ser. No. 302,477

Int. Cl. B60p *3/00*

U.S. Cl. 214—518 **14 Claims**



A cargo transporting and handling vehicle is disclosed, which facilitates unloading of cargo elements from and loading of cargo elements onto the vehicle at the various stops along a route. The vehicle has a body having a plurality of elongated guide members mounted on the floor thereof so as to provide a plurality of longitudinally extending paths for guiding the direction of movement of cargo elements on the floor. When the cargo elements are standard sized, fifty-five gallon drums, four, closely adjacent paths are provided. A lift gate at the rear of the body serves to facilitate the loading of filled drums onto the rear ends of the paths, and doors are provided on the sides of the body, adjacent the front end thereof, through which empty drums on the paths are unloaded. A gate is provided at the front end of each pair of paths to control the movement of drums on the paths and onto an unloading station adjacent each side door.

Movement of the drums along the paths as the vehicle proceeds along its route is achieved by slanting the paths downwardly from the rear end toward the front end of the vehicle body. A diverting abutment at the front end of the inner pair of paths serves to channel drums moving forwardly on the paths laterally outwardly toward the unloading stations.

A novel side wall construction is disclosed, wherein portions of the side walls are laterally outwardly displaced at particular locations so that the side walls can be positioned close to the drums and the overall width of the vehicle body minimized. The laterally outwardly displaced portions of the side walls also serve to increase their strength.

A novel method of loading and unloading the drums from the vehicle body is also disclosed, whereby the driver of the vehicle does not have to get into the vehicle body during a loading or unloading operation.

3,833,140

LOAD HANDLING EQUIPMENT

Robert R. Young, Danville, and Robert W. Medland, Hayward, both of Calif., assignors to Kaiser Industries, Inc., Oakland, Calif.

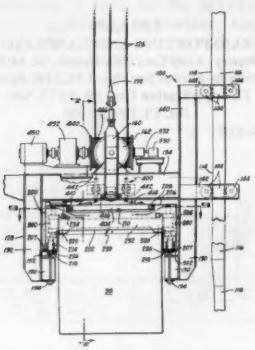
Division of Ser. No. 803,838, March 3, 1969, Pat. No. 3,608,750. This application July 10, 1970, Ser. No. 51,564

Int. Cl. B65g *47/00*

U.S. Cl. 214—658 **2 Claims**

Equipment for transferring large heavy containers and similar loads among the compartments of a vertical array of

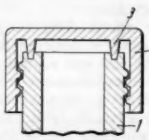
compartments and a separate transfer station and more particularly to a crane for inserting such containers into the compartments and depositing the same therein or for picking up the containers within the compartments and removing the same therefrom.



3,833,141
CONTAINER

Wilfried Leitz, Bad Krozingen, Germany, assignor to Van Leer Verpackungen GmbH

Filed Aug. 23, 1972, Ser. No. 283,033
Int. Cl. B65d *23/00, 53/00*
U.S. Cl. 215–344 **5 Claims**



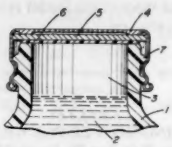
A plastic cotainer of the type adapted to accept a screw cap closure member having threading is provided in which an annular groove is placed on the rim of the mouth of the container. A removable cover having a circular ring which fits securely into the groove is also provided to form an airtight seal. Threads corresponding to those on the container are provided on the cover or on a separate cap for positioning the cover with respect to the mouth of the container to therefore effect closure.

3,833,142
METHOD OF SEALING PLASTIC CONTAINERS

Haven Trask Owen, Cheshire, and Charles William Deeley, Fairfield, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Sept. 8, 1972, Ser. No. 287,402
Int. Cl. B65d *51/18*
U.S. Cl. 215–351 **10 Claims**

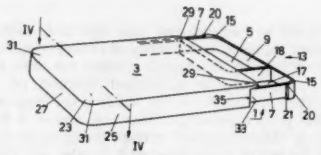
A method of sealing plastic containers so as to prevent wall collapse thereof or bubble development in or around the contents thereof wherein a thin film of stretchable plastic is sealed over the mouth of the container and a breathable closure is fitted over said film and the resultant container per se, are disclosed.



3,833,143
SLIDE CONTAINER

Paul Starkermann, Zurich, and Reinhold Birnath, Melide, both of Switzerland, assignors to Paul Starkermann & Co., Zurich, Switzerland

Filed Apr. 27, 1972, Ser. No. 248,215
Claims priority, application Switzerland, June 1, 1971, 7911/71
Int. Cl. B65d *83/04, 85/56, 43/12*
U.S. Cl. 220–345 **3 Claims**

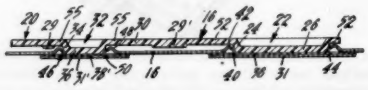


A container comprising a substantially flat drawer-like shell having front, rear and parallel sidewalls, and a cover formed of a flat plate member having at least a pair of depending sidewalls overlapping the cover. The sidewalls of the cover are provided with supports and guide elements which hold the shell and permit it to slide inwardly and outwardly in a direction parallel to the sidewalls, in a telescoping manner. The supporting elements and the engaging portions of the shell are formed so that a smooth exterior surface, free of projections is provided.

3,833,144
TWO POSITION PULL TAB EASY-OPEN CONTAINER COMPONENT

Robert Henry Bollmann, Woodstock, and Guy Curtis Richards, Crystal Lake, both of Ill., assignors to American Can Company, Greenwich, Conn.

Filed July 10, 1972, Ser. No. 270,323
Int. Cl. B65d *17/20*
U.S. Cl. 220–267 **16 Claims**



An easy-open container component comprising an end closure having an aperture therein and a reclosable two-position pull-tab having a downwardly depending plug member whose sidewall is larger at its top than at the bottom, and whose bottom surface initially is planar with, and is adhered to a sealing membrane in turn adhered to, the underside of the central

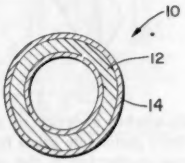
panel of the end closure. Opening of the end closure is effected by pulling upwardly on the pull-tab to pull the plug member out of the aperture and to cut the sealing membrane about the edge of the rim of the aperture. Reclosure is effected by pressuredly inserting the plug member downwardly into the aperture so that the edge of the rim of the aperture pressuredly sealingly engages the larger top portion of the plug member sidewall, and so that the bottom surface of the plug member is below the plane of the underside of the central panel of the end closure.

3,833,145

QUICK-RESPONDING THERMOMETER

Philip C. Crosby, Wakefield, and Robert J. Goyette, Chelmsford, both of Mass., assignors to Meditech Energy and Environmental Corporation, Danvers, Mass.

Filed Feb. 16, 1970, Ser. No. 11,615
Int. Cl. B65d *25/14*; G01k *7/00*
U.S. Cl. 220—64 **8 Claims**



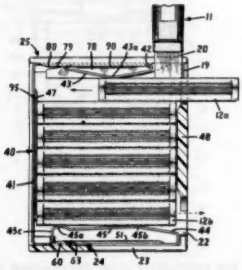
A novel, quick-responding thermometer comprising a thin metallic container enclosing a thermosensitive element, said container being formed of (1) an inner metal of high thermal conduction and relatively low mechanical strength and (2) a coating thereover of another metal which is characterized by a relatively high mechanical strength, said latter metal advantageously forming not over about 20 percent of the total wall thickness of the probe.

3,833,146

MAGAZINE HOLDING RAZOR BLADE CARTRIDGES IN FLOATING MANNER

Paul A. Braginetz, Staunton, Va., assignor to Philip Morris Incorporated, New York, N.Y.

Filed Feb. 22, 1973, Ser. No. 334,746
Int. Cl. B26b *21/24*
U.S. Cl. 221—66 **21 Claims**



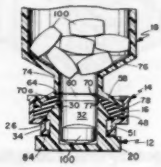
A magazine for razor blade cartridges in which the cartridges embody a plurality of blades permanently secured in a plastic body, the magazine including a main housing into which is insertable a spring clip preloaded with a stack of the cartridges with the stack mounted in an elastic support in a floating manner between opposed spring biasing means, the housing having an edge wall with a pair of openings one being adapted for the endwise insertion of a used cartridge at one end of the stack and the other opening being adapted for the endwise extraction of a new cartridge, the stack being shiftable in its elastic support to appropriately expose the ends thereof at the respective openings for the insertion and extraction of cartridges.

3,833,147

SAFETY DISPENSING CONTAINER CLOSURE

Adolph W. Borsum, and William K. Borsum, both of 521 Pacific Ave., Solana Beach, Okla. 92075

Continuation of Ser. No. 45,298, June 11, 1970, abandoned. This application July 3, 1972, Ser. No. 268,558
Int. Cl. G07f *11/20*
U.S. Cl. 221—202 **17 Claims**



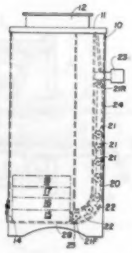
A closure for containers having a resilient diaphragm with a valve portion configuration that prevents material from passing through the opening and out the closure, a cap member for fitting into said container in a locked position, which cap member presses against the resilient diaphragm forming a seal therebetween and the resilient contact holds the cap member in the locked position, and by pressing the cap member against the diaphragm, the valve portion in the diaphragm is enlarged allowing material in the container to pass through the opening.

3,833,148

BREAD DISPENSER

Norbert W. Honas, Ellis, Kans., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Apr. 9, 1973, Ser. No. 349,216
Int. Cl. B65g *59/06*
U.S. Cl. 221—250 **1 Claim**



A bread storage and dispensing unit for feeding one slice of bread at a time from a stored vertical stack of sliced bread inside the dispenser. A conveyor unit in the form of a series of rollers pushes against the rear of the bottom slice of bread to push that slice out through a slot in the side of the housing while simultaneously the rollers of the dispensing arm support the stored slices above the slice being dispensed.

3,833,149

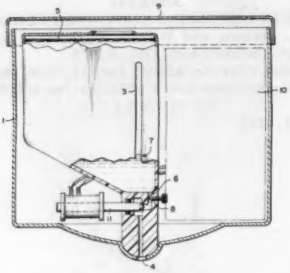
HAND LOTION DISPENSING DEVICE

Phyllis Iozzio, Hawthorne, N.J., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Feb. 16, 1973, Ser. No. 333,052

Int. Cl. B67d 5/08

U.S. Cl. 222—70 3 Claims



A hand lotion dispensing device comprises a housing having a coin slot formed therein, a viewing window therein and a lotion opening therein. Atransparent container of hand lotion in the housing has an opening therein at the lotion opening of the housing. The container is positioned at the viewing window to permit visual observation of the level of lotion in the container. A valve at the opening of the container controls the supply of hand lotion from the container via the opening. A coin meter in the housing opens at the coin slot of the housing and is coupled to the valve for controlling the operation of the valve upon the supply of a coin to the coin meter.

3,833,150

POURING STOP

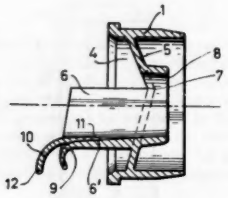
Wilhelmina Louise Maria Visser-Patings, Havendyn 505, Schiedam, Netherlands

Filed June 13, 1972, Ser. No. 262,200

Claims priority, application Netherlands, June 16, 1971, 7108244

Int. Cl. B65d 25/42

U.S. Cl. 222—109 4 Claims



A pouring stop for bottles and other liquid containers. The stop comprises a spout, having a pouring lip, and cooperating with a collecting space around the spout. The spout is provided with a pouring tongue attached to the inner side of the spout, extending initially outwardly parallel to the spout axis and subsequently being curved in the same direction as and spaced from the pouring lip. The lip acts to draw the last drop back into the bottle.

3,833,151

APPARATUS FOR ASSISTING DISCHARGE OF PARTICULATE SOLIDS FROM A BIN

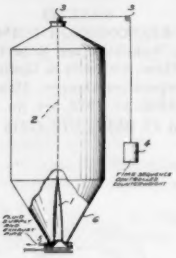
Werner Lieckfeld, Hitzhusen, Germany, assignor to Bran & Luble, Hamburg, Germany

Filed Oct. 4, 1972, Ser. No. 292,868

Claims priority, application Germany, Oct. 4, 1971, 2149476

Int. Cl. B65g 3/12

U.S. Cl. 222—193 9 Claims



This disclosure teaches a device to assist in discharging (under gravity flow) particulate solids from a bin. A hollow body is positioned in the bin in the vicinity of a gravity discharge outlet thereof. The volume of the hollow body is varied pneumatically, hydraulically and/or mechanically to assist in discharging the solids. By this teaching chimney flow and bridging are obviated. Where the volume of the hollow body is varied pneumatically, air or some other gas may be emitted from the hollow body at the discharge outlet further to assist the discharging of the solids.

3,833,152

DEVICE FOR PRODUCING UNIFORM DISTRIBUTION OF PRODUCT DISSOLVING IN A CURRENT OF WATER

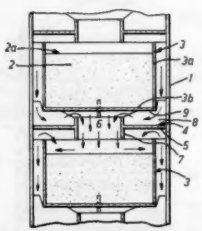
Guy J. Villette, Grenoble, France, assignor to Societe a Responsabilite Limitee dite Filtres Siebec, Fontaine, France

Filed Nov. 8, 1972, Ser. No. 304,656

Claims priority, application France, Nov. 10, 1971, 71.40265

Int. Cl. B67d 5/00

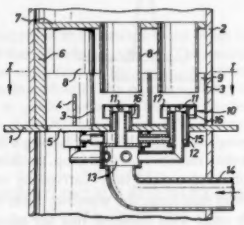
U.S. Cl. 222—193 7 Claims



A device for producing even distribution of a product dissolving in a current of water, such as a cake of chlorine serving to disinfect water in a swimming bath. The chlorine is contained in cartridges arranged in successive stages in a conduit through which the current of water flows. The upstream end of each cartridge is open to expose the chlorine to the force of the water. The cartridges are supported in the conduit by transverse baffles which axially space the cartridges apart and also direct the current of water at the centre of the exposed

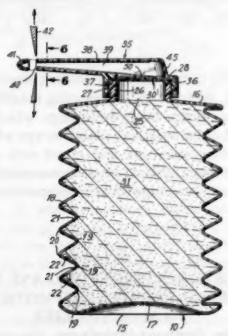
chlorine. In one form of the device a single cartridge is provided at each stage, supported by a baffle having a central orifice. In another form two cartridges are provided at each stage, supported by a baffle having two orifices, the cartridges and the orifices being arranged symmetrical with respect to the axis of the conduit but the cartridges being disposed 90° out-of-phase with the orifices. Each orifice may have a bush to assist in directing the current of water at a downstream cartridge.

3,833,153
FLUID FLOW DISCHARGING APPARATUS
Francis Paul Somogyi, 17 Waterloo Pl., London, England
Filed Jan. 24, 1973, Ser. No. 326,271
Int. Cl. B67d *5/54*
U.S. Cl. 222—193 **4 Claims**



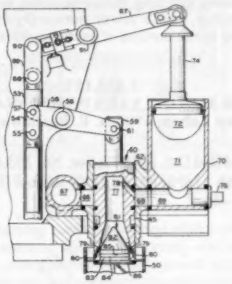
In order to discharge granular material from a container a discharge pipe including a trap is provided in the lower part of the container. Granular material flows upwardly in the trap to an equilibrium level. Injected fluid flushes granular material from the trap out of the container. More granular material flows into the trap to replace that which has been flushed out.

3,833,154
COLLAPSIBLE DISPENSING CONTAINER
Isral J. Markowitz, Closter, N.J., assignor to Stem Development Corp., New York, N.Y.
Filed Sept. 27, 1972, Ser. No. 292,559
Int. Cl. B65d *37/00*
U.S. Cl. 222—212 **8 Claims**



A collapsible dispensing container wherein a container body is provided with an opening having a discharge member engaged over the opening, and in the opening is a one-way valve resiliently biased to permit fluent material movement outwardly upon collapse of the container body and prevent fluent material entry to the body.

3,833,155
POSITIVE DISPLACEMENT LIQUID DISPENSING MECHANISM
Silvio Farfaglia, Fulton, N.Y., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Filed Sept. 7, 1973, Ser. No. 395,111
Int. Cl. G01f *3/38*
U.S. Cl. 222—275 **6 Claims**



A unitary valve body has a cylindrical opening therethrough to readily permit the insertion and withdrawal of a unitary cylindrical valve stem. The valve stem has an annular circumferential channel to provide communication between a supply conduit and a metering chamber in the intake position of the valve stem. The valve stem has an elongated cavity therein, and a passageway inclined outwardly and downwardly from the axis of the valve stem to provide communication between the metering chamber and the cavity in the dispensing position of the valve stem. A readily detachable plug closes off the bottom of the cavity, while a plurality of dispensing passageways provide communication between the cavity and the container being filled when the valve stem is in the dispensing position. An adjustable linkage is provided on the lever arm driving the piston in the metering chamber.

3,833,156
DRUM-TOP PUMP ASSEMBLY
Curtis R. Hough, Zion, Ill., assignor to Chrismin Manufacturing Company, Inc., Zion, Ill.
Filed May 18, 1973, Ser. No. 361,571
Int. Cl. B67d *5/40*
U.S. Cl. 222—383 **4 Claims**

A fluid pump assembly adapted to be removably mounted upon an upright cylindrical fluid-containing drum. The assembly includes a rigid mounting plate with a motor-driven pump mounted on its upper face. Four downwardly extending shoulder flanges are attached to the plate at its periphery and are spaced to engage with the upper rim of a drum of standardized size, thus securing the plate against horizontal motion on the drum. An open-ended sleeve attached to and ex-

tending downwardly from the lower face of the mounting plate is located in an off-center position to register with and pass through the bunghole of the drum. Flexible hoses pass from the motor-driven pump, through a hole drilled in the plate above the sleeve, and through the sleeve itself to the interior of the drum. When the pump assembly is not in use, the flexible pressure output hose attached to the pump is wound around and secured by C-shaped brackets formed by the combination of the vertical shoulder members, an upper outwardly-extending carrying flange secured to the top of each shoulder member, and a lower outwardly-extending holding flange secured to the bottom of each shoulder member.

3,833,157

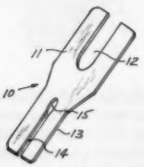
DEVICE FOR MAKING YARN POMPONS AND FLOWERS

Melvyn Forrest Lofton, 6708 N. E. Roselawn, Portland, Oreg. 97218

Filed Oct. 2, 1972, Ser. No. 293,848

Int. Cl. A41h *31/00;* **B31c** *13/00;* **B65h** *81/00;* **D04d** *7/06*

U.S. Cl. 223—46 **4 Claims**



A tapered board, slotted at both ends, holds a yarn end and provides a winding area for making yarn pompons, rosettes and the like.

3,833,158

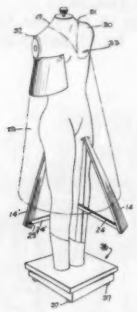
GARMENT MAKER'S MANNEQUIN

George Cavrich, 1285 Madison Ave., New York, N.Y. 10028

Division of Ser. No. 245,131, April 18, 1972, abandoned. This application Sept. 17, 1973, Ser. No. 397,801

Int. Cl. A41h *5/00*

U.S. Cl. 223—68 **3 Claims**



A flexible garment pattern is formed from a self-supporting plastic shell initially placed on a mannequin. The shell is cut while draped on the mannequin to the desired style and shape and then separated into several pieces of three-dimensional shape. These pieces are used as pattern pieces to cut out fabric pieces for a garment.

The mannequin is provided with an adjustable fit plate in the bustline and kicker plates in the leg portion to impart a desired silhouette to the shaped shell.

3,833,159

FLUSH HOSIERY HANGER

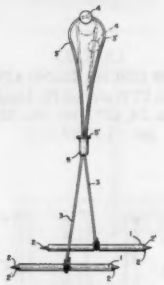
Iwao Ono, 78 Ajirokita 1-chome, Osaka, Japan

Filed May 18, 1973, Ser. No. 361,411

Claims priority, application Japan, June 26, 1972, 47-75429

Int. Cl. A47j *51/94*

U.S. Cl. 223—85 **5 Claims**



The hanger comprises a flexible cord having a loop and two standing parts, a stop member on said loop, preferably slidably mounted thereon, and a slide tube carried by said standing parts for shortening said loop, the standing parts having hanging bars at their ends with reduced tips for piercing spaced portions of the hose to be supported, the slide tube and stop enabling firm securement of the flattened loop and standing parts about a support.

3,833,160

SKI-HOLDING DEVICE WITH MOUNTINGS FOR CLAMP STRAPS

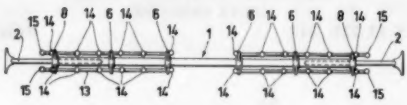
Bror Adolf Andersson, Dalsjofors, Sweden (S 51050)

Filed Feb. 9, 1973, Ser. No. 331,299

Claims priority, application Sweden, Feb. 17, 1972, 1918/72

Int. Cl. B60r *9/12*

U.S. Cl. 224—42.1 F **11 Claims**



The invention concerns a ski-holding device for use on a motor car roof. At least two supporting members, secured on the roof, have clamp strap mountings which are arranged detachably to hold at least two clamp straps which are parallel to the supporting members and coact with each other (to clamp a ski or other object) in such manner that should one strap fail to function properly the companion strap acts as a reserve.

3,833,161

APPARATUS FOR INTERCEPTING AND THREADING THE LEADER OF CONVOLUTED MOTION PICTURE FILM OR THE LIKE

Fritz Krumbein, Stuttgart-Mohringen, Germany, assignor to Robert Bosch Photokino GmbH, Stuttgart, Germany

Filed Feb. 7, 1973, Ser. No. 330,385

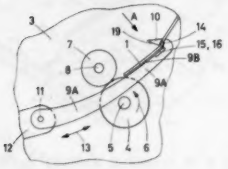
Claims priority, application Germany, Feb. 8, 1972, 2205719; Feb. 24, 1972, 2208733

Int. Cl. G03b *1/56*

U.S. Cl. 226—92 **9 Claims**

Apparatus for intercepting and threading the leader of convoluted motion picture film has a catcher with a tooth which

can enter an aperture of the leader and thereupon moves toward two advancing wheels which serve to transport the leader toward a takeup reel. The catcher is provided with guide means in the form of a notch or recess and/or one or more platforms which straighten out a curved or knicked



leader so that the tip of the leader is more likely to find its way into the nip of the advancing wheels. The recess or notch is provided in that edge face of the tooth on the catcher which faces the advancing wheels. The platforms flank the tooth and not only serve to guide the leader but also center the catcher when they engage the flanges of one of the advancing wheels.

3,833,162

WOOD FEEDING DEVICE FOR BARK STRIPPING MACHINE

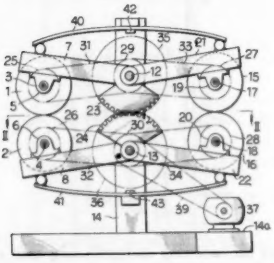
Junichi Sato, Asahikawa, Japan, assignor to Eno Industries Co. Ltd., Hokkaido, Japan

Filed July 24, 1973, Ser. No. 383,146

Claims priority, application Japan, Oct. 31, 1972, 47-108443

Int. Cl. G03b *1/46*

U.S. Cl. 226—184 **3 Claims**



A device for feeding wood to a bark stripping machine while centering the wood longitudinally with respect to the bark stripping machine, in which a pair of roller assembly units each comprising a pair of parallel arms rotatably supporting a feed roller between one ends and respectively having gears fixed to the other ends thereof are put together on one side of fixed shafts, with said feed rollers and gears of the respective units in engagement with each other, and pivotably mounted on said fixed shafts respectively with said fixed shaft extending through the centers of said gears, and another pair of similar roller assembly units are similarly put together on the other side of said fixed shafts and pivotably mounted on said fixed shaft, and further plate springs are provided to urge said engaging feed rollers each toward the center of the other one, said feed rollers being driven to cooperatively transfer the wood from one to the other side of the device to be fed to the bark stripping machine.

3,833,163

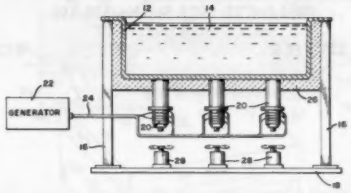
ULTRASONIC APPARATUS

Clark A. Denslow, Wilton, and Edward G. Obeda, Brookfield, both of Conn., assignors to Branson Instruments, Incorporated, Stamford, Conn.

Filed Mar. 8, 1973, Ser. No. 339,083

Int. Cl. B23k *1/06*

U.S. Cl. 228—1 **3 Claims**



An ultrasonic soldering tank is provided with a plurality of electroacoustic transducer assemblies, each assembly comprising a stacked arrangement of juxtaposed piezoelectric disks, a plate of high thermal conductivity material for acting as a hear sink and a coupling bar of low thermal conductivity material. The coupling bar while transmitting acoustic energy from the piezoelectric disks to the tank also provides thermal insulation between the hot tank and the heat sensitive piezoelectric material.

3,833,164

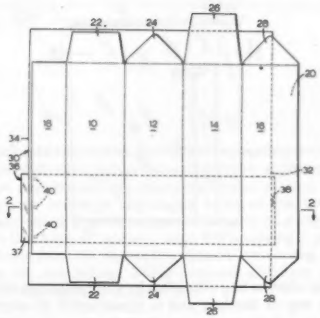
DECORATIVE CONTAINER

Leslie James Dagostine, Dollard des Ormeaux, Quebec, Canada, assignor to Somerville Industries Limited, Terminal A., London, Ontario, Canada

Filed July 20, 1972, Ser. No. 273,403

Int. Cl. B65d *5/02*

U.S. Cl. 229—37 R **4 Claims**



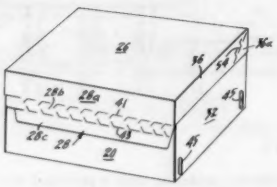
This invention relates to a container blank comprising a paperboard blank having a series of side panels, a top wall and a bottom wall, said series of side panels being hinged together at fold lines, a glue flap hinged to said first side panel of said series of side panels, said first side panel being at one end of said series of side panels, a second side panel of said series of side panels having an adhesive receiving strip or area adjacent the marginal portions of the free edge thereof, said second side panel being at the other end of said series of side panels to said first side panel, a decorative overwrap laminated to said paperboard blank, said overwrap having a marginal edge terminating at said adhesive strip or area, a band extending

across said series of side panels, said band having marginal portions of its first end adhesively secured to said adhesive strip or area and marginal portions of its second end adhesively secured to said glue flap.

3,833,165
END WALL CONSTRUCTION FOR A CARTON

Stephen North Hoiles, Greenville, Ill., assignor to American Can Company, Greenwich, Conn.

Filed Jan. 22, 1973, Ser. No. 325,416
Int. Cl. B65d *5/02, 17/12*
U.S. Cl. 229—37 R **6 Claims**

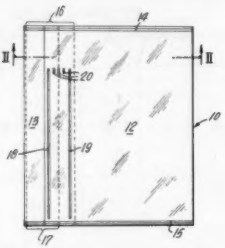


An end wall construction for a carton including an anti-seepage or leakage barrier formed partially of embossments bridging the gap between overlapped end panels and partially of a line of water-resistant adhesive adhering the overlapped panels together.

3,833,166
VALVE BAG

Charles Robertson Murray, Toronto, Ontario, Canada, assignor to Canadian Industries Limited, Montreal, Province of Quebec, Canada

Continuation-in-part of Ser. No. 210,836, Dec. 22, 1971, abandoned. This application Jan. 24, 1973, Ser. No. 326,546
Claims priority, application Canada, Mar. 24, 1971, 108630
Int. Cl. B65d *31/14*
U.S. Cl. 229—62.5 **10 Claims**



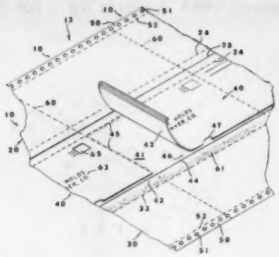
A valved plastics bag which has its valve adjacent and parallel to the top of the bag and is constructed of overlapping multi-ply panels in the front wall of the bag, the valve being formed between the panels, and one ply of the inner panel forming a sift-proof flap for the valve.

3,833,167
DATA MAILING SET

John R. Kapitan, 405 S. Kipling St., Lakewood, Colo. 80226

Filed June 12, 1972, Ser. No. 261,762
Int. Cl. B65d *27/06, 27/10*
U.S. Cl. 229—69 **5 Claims**

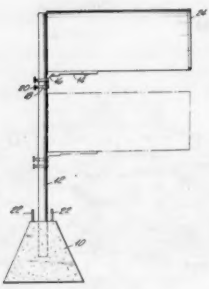
A data mailing set integrally comprising a message panel, address panel, and return envelope panel assembled in marginally punched continuous form stationery for precision feeding and imprinting in computer line printers and office machines without the use of carbon imprints, envelope windows, or address labels. Fixed data and postal indicia may be preprinted during the manufacture of the form and variable data may be imprinted during data processing operations. The folded and sealed set is opened by the recipient by detaching a tear strip along one edge of the sealed set.



3,833,168
MAIL BOX WITH HEIGHT ADJUSTABLE SUPPORT MEANS

Carl T. Sackrison, Stratford, Iowa, assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Jan. 17, 1973, Ser. No. 324,379
Int. Cl. A47g *29/12*
U.S. Cl. 232—39 **1 Claim**



Apparatus for receiving and collecting mail comprising a heavy base, the outer surfaces of the base tapering upward and inward; a vertical post downward through the base; a rural delivery type mail box; and means supporting said box and slidable along the post to support the box at any desired height along the post, said means including a manually operable mechanism for locking the box into position, said means being rotatable about the post.

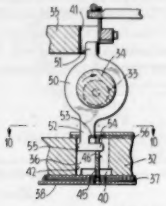
3,833,169
HIGH SPEED PUNCH

Arthur J. Malavazos, Hayward, and Jan Urdal, San Mateo, both of Calif., assignors to A. J. M. Research Corporation, Hayward, Calif.

Continuation-in-part of Ser. No. 183,151, Sept. 23, 1971, abandoned. This application Mar. 12, 1973, Ser. No. 339,985
Int. Cl. G06k *1/05*
U.S. Cl. 234—110 **7 Claims**

This invention relates to a light-weight, high-speed punch of very simple construction comprising a constantly rotating ec-

centric shaft; a number of interponents, or drivers, journalled on the eccentric (one for each punch to be operated); and a



number of punches slidably mounted in a guide bar are aligned with the interponents but normally not operatively connected thereto. The interponents and the punches are normally not in engagement with each other; the end of the interponent adjacent the punch being resiliently restrained, as by slight friction, in a disengaged position, leaving the other, or free, end of the interponent free tooscillate through a circular path with the rotation of the eccentric. Whenever a punch is required to be operated, a block is interposed in the path of travel of the free end of the interponent, whereby the other end of the interponent is forced by the rotation of the eccentric into engagement with the punch to push it through a punching operation. A nose on the interponent positively restores the interponent to an inoperative position at the end of that cycle of rotation. It is assumed that the card or tape to be punched will be fed by conventional feeding means.

3,833,170

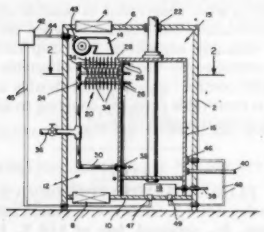
SINGLE UNIT AIR-WATER HEATING APPLIANCE

John Marshall, 354 Rose Cir., Seal Beach, Calif. 90740

Filed Oct. 12, 1972, Ser. No. 296,912

Int. Cl. F24h *6/00*

U.S. Cl. 236—9 R **4 Claims**



A single unit heating appliance comprising an air plenum and a water heating container with a heat exchanger extending into the plenum is shown. Water is heated by a burner and some of its heat is transferred to the heat exchanger which transfers the heat to ambient air passing thereover.

3,833,171

TEMPERATURE RESPONSIVE VALVE ASSEMBLY

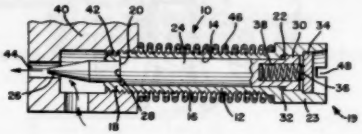
Robert T. Gifford, Yellow Springs, Ohio, assignor to Vernay Laboratories, Inc., Yellow Springs, Ohio

Filed July 18, 1973, Ser. No. 380,293The portion of the term of this patent subsequent to Oct. 10, 1989, has been disclaimed.

Int. Cl. G05d *23/275*

U.S. Cl. 236—102 **10 Claims**

A fluid flow metering valve which functions to decrease the effective area of a flow port in response to temperature decreases until a preselected temperature is reached, at which point further decreases in temperature have no appreciable effect on the effective size of the flow port area. The valve includes a valve casing constructed of a material having a relatively high coefficient of linear thermal expansion and a valve core slidably received in the casing and constructed of a



material having a relatively low coefficient of linear thermal expansion. The valve core is provided with an enlarged head at one end and a shoulder adjacent its opposite end, both of which are adapted to engage abutments or stops formed in the bore in the casing receiving the core, and a coil spring urges these portions of the core and casing into engagement with each other.

3,833,172

TRACK SYSTEM FOR ROOF TOPS

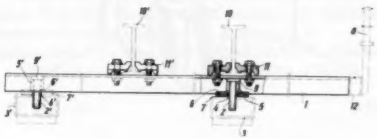
Richard Hiergeist, Munich, Germany, assignor to Mannesmann Leichtbau GmbH, Munich, Germany

Filed Dec. 27, 1972, Ser. No. 318,902

Claims priority, application Germany, Dec. 31, 1971, 2165825

Int. Cl. E01b *23/00*

U.S. Cl. 238—10 R **4 Claims**



A track and rail system for vehicles operating on roof tops is provided with rails and crossties, whereby additional support ties, two per crosstie, are interposed between roof and crossties. Spacer bushings adjust the level of the crossties individually relative to the support ties, as laid on the roof. The support ties have an opening each for receiving a pin that extends down from the respective crosstie, traversing the spacer bushing for positioning. Noise damping disks are interposed between bushings and support ties.

3,833,173

APPARATUS AND PROCESS FOR SPRAYING LIQUIDS

Clark B. Rose, Lagrange; Richard B. Kelley, and Richard B. Ravitts, both of Rockford, all of Ill., assignors to Richards of Rockford, Inc., Rockford, Ill.

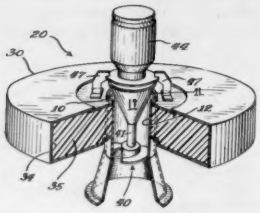
Continuation-in-part of Ser. No. 273,181, July 19, 1972, Pat. No. 3,771,724. This application June 18, 1973, Ser. No. 370,734

Int. Cl. B05b *17/04*

U.S. Cl. 239—11 **20 Claims**

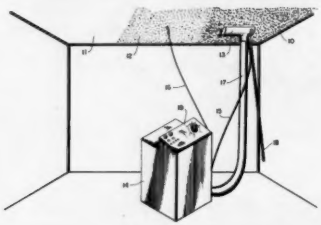
A pressure nozzle for spraying liquid as droplets substantially free from droplets of sizes that will form a mist which will

drift. A conical liquid sheet is conducted along a conical wall that extends beyond the nozzle orifice. A tubular liquid sheet



intersects the conical sheet on the conical wall, and the resultant conical stream which is discharged into the atmosphere, disrupts into droplets in a predictable manner.

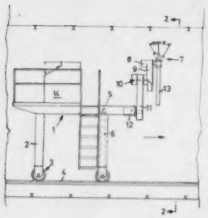
3,833,174
ELECTROSTATIC DEPOSITION SURFACE SYSTEM
Karl J. Sarzen, 2253 Tamasee Ct., N.E., Atlanta, Ga.
Filed Feb. 9, 1973, Ser. No. 331,275
Int. Cl. B05b *13/04, 5/02*
U.S. Cl. 239—15 **4 Claims**



Electrostatic deposition is utilized to coat surfaces of materials with polystyrene particles. The surfaces are coated with an electrically-conductive adhesive. Then, an electrostatic field is set up between the adhesive surface and an electrode on an applicator which may or may not be connected to a continuous feed machine for polystyrene particles. Polystyrene particles are given an electrical charge when in contact with the electrode and are propelled by the electrostatic field to the adhesive surface.

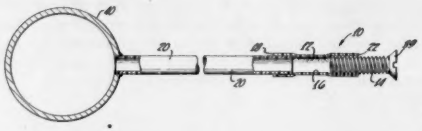
3,833,175
MOBILE-PLATFORM-SUPPORTED DEVICE FOR THE APPLICATION OF A SPRAYABLE MATERIAL TO A SURFACE
Elgas Pulk, deceased, late of Stockholm, Sweden; by Carlgustaf Hallsenius, administrator, Uppsala, and John Paul Noren, Upplands Vasby, both of Sweden, assignors to Stabilator AB, Bromma, Sweden
Filed Feb. 22, 1973, Ser. No. 334,596
Claims priority, application Sweden, Feb. 29, 1972, 2531/72
Int. Cl. B05b *3/00, 3/18*
U.S. Cl. 239—160 **5 Claims**

The present invention relates to a device supported by a mobile platform for the application of a sprayable material to a surface, for example sprayed concrete to a tunnel wall. It comprises a spray nozzle which is fitted to the free end of an extendable holder arm and it is mainly characterized in that the holder arm is pivoted at its lower end on a first swinging axis parallel to the direction of motion of the platform, the axis



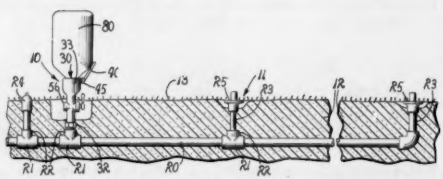
being situated at the free end of at least one intermediate arm, which in turn is pivoted on a second swinging axis parallel with the first swinging axis.

3,833,176
DRIP EMITTER DEVICE
Knox V. Caldwell, Rt. 4, Box 430K, Escondido, Calif. 92025
Filed May 7, 1973, Ser. No. 357,936
Int. Cl. B05b *15/00*
U.S. Cl. 239—542 **11 Claims**



A drip emitter device for plant subsoil irrigation having a flexible tubular coupling into which a threaded control rod is slidably fitted. The interior surface of the resilient coupling is smaller than the outside diameter of the threads of the rod, resulting in a secure contact in a biased manner between the coupling and the rod to form a helical flow path. The coupling is transparent to allow observation of possible clogging within the threaded channel. The contact between the rod and the coupling is slideably adjustable. The drip rate exiting the emitter is controlled by the readily adjustable longitudinal position of the control rod within the flexible coupling. The control rod is removable from the coupling to allow easy and fast cleaning of the threaded channel.

3,833,177
FLUID DISSEMINATING DEVICE
Harry M. Pasley, 5854 E. Clubview, Fresno, Calif. 93727, and Neil J. Dau, Jr., deceased, late of 910 E. Holland Ave., Fresco, Calif. 93704 (by Carol Dau, executrix)
Continuation-in-part of Ser. No. 282,415, Aug. 21, 1972, abandoned. This application Aug. 2, 1973, Ser. No. 384,800
Int. Cl. A01g *25/06*
U.S. Cl. 239—201 **13 Claims**



A fluid disseminating device having a body with opposite ends and a pair of passages of dissimilar diameters intercon-

necting the opposite ends, a coupling mounted at one of the ends adapted for attachment to a system containing fluid under pressure, and a receptacle for fluid contents mounted at the other end of the body in communication with both passages for the establishment of a gradual circulation of fluid from the system through the passage of largest diameter into the receptacle to mix with and gradually to flush the contents therefrom through the passage of smallest diameter for subsequent gradual dissemination through the system.

3,833,178

METHOD OF COMMINUTING SYNTHETIC-RESIN ARTICLES

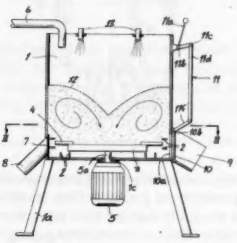
Erich Beck, 6520 Worms-Weinsheim, Am See 29, Worms-Weinsheim, Germany

Continuation-in-part of Ser. No. 110,122, Jan. 27, 1971, Pat. No. 3,717,307. This application Nov. 6, 1972, Ser. No. 304,265

Claims priority, application Germany, Feb. 6, 1970, 2005360; Nov. 12, 1971, 2156198

Int. Cl. B02c *13/06*

U.S. Cl. 241—3 **6 Claims**



A method of and an apparatus for the comminution of synthetic-resin articles wherein a rotatable grinder operating at high speed in a container comminutes the articles and, at the same time, agitates the pieces of synthetic resin in a washing liquor containing a washing agent so that both washing and comminution occur simultaneously.

3,833,179

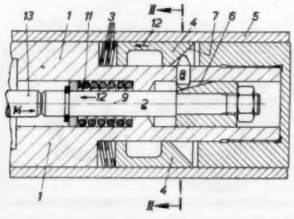
MANDREL

Ruprecht Maurer, Schaberweg 32-34, 6380 Bad Homburg, Germany

Filed Nov. 28, 1972, Ser. No. 309,979

Int. Cl. B65h *54/54*

U.S. Cl. 242—46.4 **5 Claims**



In spool mandrels having clutch discs which transmit torque between spool shafts and spools when axial clutching pressure is applied to the discs, a biasing arrangement in which the clutching pressure is transmitted to the disc and radially movable contact elements positioned in the spool shaft press against a cam surface of a bushing, such that at high speeds the centrifugal force on the contact members increases the clutching pressure.

3,833,180

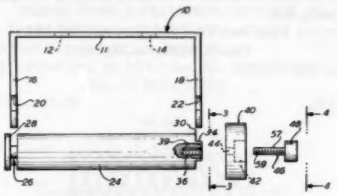
PAPER ROLL HOLDER

George Balasic, Clark, N.J., assignor to Carol Stamping and Manufacturing Inc., Clark, N.J.

Filed Sept. 20, 1972, Ser. No. 290,674

Int. Cl. A47k *10/16*

U.S. Cl. 242—55.2 **13 Claims**



A roll holder which can be locked to an anchoring device which supports the holder. The anchoring device has outwardly extending arms with first and second channels formed therein. A tubular member is adapted to mate with the channels formed in the outwardly extending arms. The tubular structure has an annular channel formed in one end and an axial extension formed on the other end, such that a locking device can pull the tubular structure toward one end of the outwardly extending arms and fixedly lock it thereto.

3,833,181

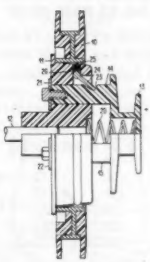
MANUALLY ACTUATED TAPE REEL LATCH

Norman Watkins, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 32,943, April 29, 1970, abandoned. This application Feb. 9, 1972, Ser. No. 224,993

Int. Cl. B65h *17/02*

U.S. Cl. 242—68.3 **8 Claims**



A tape reel latch which allows a reel of magnetic tape to be loosely positioned on a drive hub such that subsequent actuation of the latch is effective to couple the reel to the hub. An expandable rubber ring encircles the hub, under the reel, and is of a diameter less than the diameter of the hub so as not to interfere with the initial placement of the reel on the hub. A latching knob is mounted on the hub and is axially spring-biased away from the hub. A plurality of relatively long pins are circumferentially spaced to extend between the inside diameter of the rubber ring and a cam surface which is formed on the knob. Axial depression of the knob expands the rubber

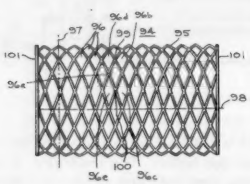
ring and causes the pins to move overcenter. The expanded rubber ring is effective to exert a force, through the pins, to the knob, to maintain the knob in this depressed position against the force of the axial spring bias. However, the rubber ring is effective to perform this function only when the ring is compressed against a reel. If a reel is not in place on the hub, the knob automatically returns to its original position, due to the axial spring bias.

3,833,182

INTEGRAL OPEN MESH SPOOL

Albert F. Wilcox, Yoder, and Robert D. Mees, Fort Wayne, both of Ind., assignors to General Electric Company, Indianapolis, Ind.

Filed Dec. 17, 1971, Ser. No. 209,182
Int. Cl. B65h *75/20, 75/10*
U.S. Cl. 242—118.1 **13 Claims**



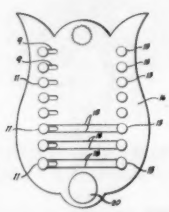
An integral, open mesh, wound spool of generally cylindrical form includes a body section of a crossed strip of material, forming plurality of open diamonds, and a pair of spaced apart substantially solid end portions. The diamonds are in rows, circumferentially and rows longitudinally of the spool, with each of the circumferential rows having a predetermined odd number of diamonds and with the number of diamonds in each circumferential row and the number of diamonds in each longitudinal row having only unity as a common factor.

3,833,183

SKEIN HOLDER WITH SLIDEABLE BIASED PEGS

Jonathan Michael Swatzell, Jr., 1430 Aires Ct., Chula Vista, Calif. 92011

Filed May 18, 1973, Ser. No. 361,833
Int. Cl. B65h *49/30*
U.S. Cl. 242—127 **7 Claims**



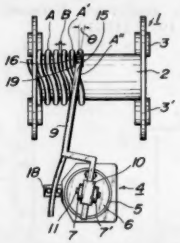
There is disclosed a device for holding skeins of stitchery material under tension. A base member has a plurality of elongated slots for receiving movable pegs. A plurality of movable pegs are inserted into the plurality of slots, each slot having one peg inserted therein. A plurality of stationary pegs are mounted on the base member oppositely disposed and spaced, respectively, from the plurality of movable pegs inserted into the base member. A bias element is attached between each of the plurality of movable pegs and the base member for biasing each of the movable pegs toward one end of the slot in which it is located most remote from the respective oppositely disposed stationary peg whereby a skein of stitchery material, which may be placed around each of the movable pegs and the respective oppositely disposed stationary peg, is automatically held in tension at all times by the bias element to secure the skein to the pegs about which it is looped.

3,833,184

WINDING TRAVERSE APPARATUS

Ryoichi Hara; Kunio Kumagai, both of Ichihara, and Tadao Ogino, Fujisawa, all of Japan, assignors to The Furukawa Electric Company Limited, Tokyo, Japan

Filed Dec. 18, 1972, Ser. No. 316,000
Claims priority, application Japan, Dec. 18, 1971, 46-103041
Int. Cl. B65h *54/28*
U.S. Cl. 242—158 R **9 Claims**



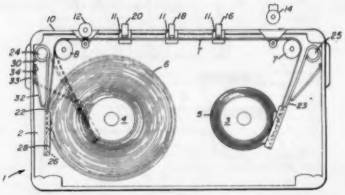
A traverse apparatus for guiding linear product or the like in winding the product on a reel, which traverse apparatus includes an arm pivotally carried by a traverser so as to extend toward the reel, and a product-engaging guide member pivotally connected to the extended free end of the arm. The guide member engages the product at the point where the product comes in touch with the drum portion of the reel, and the longitudinal axis of the guide member is kept in parallel with the longitudinal direction of that portion of the product which engages the guide member; so that the longitudinal axial direction of the guide member and the longitudinal direction of the arm define an angle θ therebetween. The traverser is controlled in such a manner that the aforesaid angle θ is kept constant by moving the traverser in parallel with the axis of rotation of the reel.

3,833,185

MAGNETIC TAPE CASSETTE

Jean Joseph Fernand Talavera, Creteil, France, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed July 23, 1973, Ser. No. 381,465
Int. Cl. G03b *1/04*; **G11b** *15/32, 23/04*
U.S. Cl. 242—199 **3 Claims**



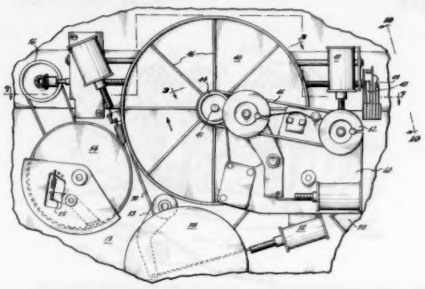
A tape cassette is provided with resiliently biased braking and guiding arms having spaced guide surfaces for guiding the tape edges to maintain alignment of the tape with the convolutions of tape wound on the tape core.

3,833,186

TELEPHONE ANSWERING DEVICE

Kenneth A. Catto, and Harold R. Burt, both of Beaverton, Oreg., assignors to Data Time, Inc., Portland, Oreg.

Filed Nov. 24, 1972, Ser. No. 308,970
Int. Cl. B11b 15/32; G03b 1/04
U.S. Cl. 242—201 4 Claims



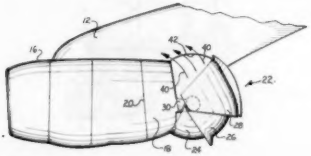
A direct coupled telephone answering device having an announcement deck for recording and reproducing an announcement in response to an incoming call and a message deck for recording and reproducing incoming messages. Forward and reverse tape motion for both decks is provided by a single flywheel and a simple system of drive belts. All rotating reels are mounted for free rotation on fixed spindles. Hubs in these wheels, which preferably are formed of plastic, comprise bearings which ride on such spindles, promoting uniform bearing wear even with substantial side-loading on the wheels. A single syllabic detector coupled to an announcement time-out circuit and a message time-out circuit provides control signals for various switching functions at predetermined time periods after termination of the announcement and message, thus affording a broad variable timing cycle for both the announcement deck and the message deck. Circuitry is provided for individually varying the durations of the time periods.

3,833,187

THRUST CONTROL APPARATUS FOR POD MOUNTED ENGINE

Charles Kahler, Kirkland, and Lucas James Kimes, Seattle, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed May 11, 1973, Ser. No. 359,249
Int. Cl. B64c 15/08
U.S. Cl. 244—12. D 7 Claims



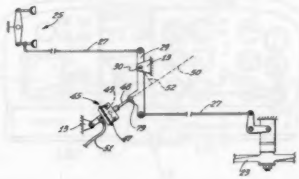
A jet engine is connected to a mounting strut which extends downwardly and forwardly from the wing so that the exhaust nozzle of the jet engine is positioned forwardly of the leading edge of the wing. A thrust control device for use in conjunction with a pod mounted jet engine on an aircraft includes three rotatable panels which are mounted aft of the discharge nozzle of the jet engine on the mounting strut. The panels are nested on top of each other above the nozzle during cruise operation of the engine. A single actuator moves only a first of the three panels through a predetermined arc to a position rearwardly of the nozzle to divert the engine exhaust stream downwardly and rearwardly for powered lift operation. Sequencing mechanism interconnects the second and third panels with the first panel so that when the latter is moved beyond the predetermined arc, the second and third panels will be moved to a position blocking the rearward and lower portion of the nozzle so that the exhaust stream from the jet engine is diverted upwardly and forwardly for thrust reversing operation.

3,833,188

PEDAL FORCE TRIMMING DEVICE

Franklin Davis Robinson, Palos Verdes, Calif., assignor to Hughes Tool Company, Culver City, Calif.

Filed Oct. 24, 1972, Ser. No. 299,928
Int. Cl. B64c 27/82
U.S. Cl. 244—17.19 15 Claims



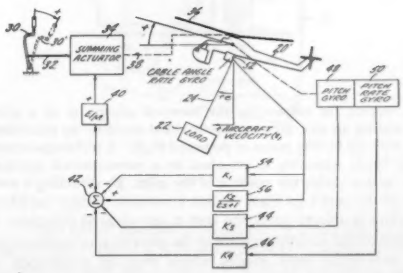
In a helicopter having a main rotor and a tail rotor each rotatable by an engine, foot pedals are operable to vary the pitch of the tail rotor through a linkage in order to maintain the desired disposition of the helicopter about a vertical axis. As the tail rotor rotates, natural forces are developed in its blades which tend to return them to a pitchless state. These forces are transmitted through the linkage to produce a load on the foot pedals. A pedal force compensator, responsive to the compressor discharge pressure of the engine, exerts a force at a particular point on the linkage to provide in all flight regimes an equivalent pedal force substantially equal in magnitude and opposite in direction to the pedal load. In this manner, the helicopter can be maintained in all flight regimes with substantially no pressure by the pilot on the foot pedals.

3,833,189

LOAD STABILITY SYSTEM

Donald W. Fowler, West Haven, and Sean J. O'Connor, Monroe, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

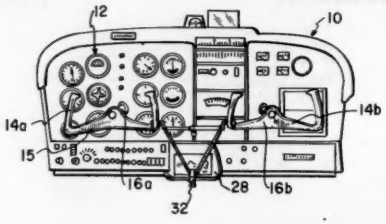
Division of Ser. No. 169,197, Aug. 5, 1971, Pat. No. 3,756,543.
This application Jan. 4, 1973, Ser. No. 321,061
Int. Cl. B63c 17/04
U.S. Cl. 244—77 R 3 Claims



A heavy lift helicopter supporting a load suspended on a long cable is automatically controlled to minimize pendular

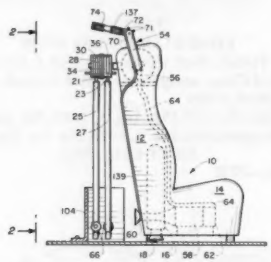
motion of the load beneath the helicopter. The inner control loop of an automatic flight control system of a helicopter has an additional input which is the summation of a function of the rate of change of the angle between the cable and vertical, and the lag filtered rate of change of the angle, in both the lateral (roll) and longitudinal (pitch) directions of the aircraft. The sense of the rate of lag rate inputs is such as to cause the helicopter to move so as to counteract pendular motion of the load and support cable.

3,833,190
SAFETY GUST LOCK FOR AIRCRAFT CONTROLS
Alexander Gaio, 116 Oakside Dr., Smithtown, N.Y. 11787
Filed May 29, 1973, Ser. No. 364,818
Int. Cl. B64c *13/14*
U.S. Cl. 244—83 A **15 Claims**



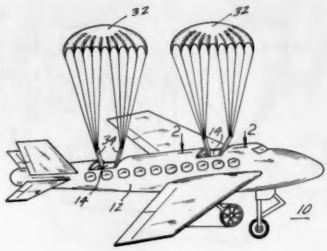
A safety gust lock for aircraft controls in which the control column is locked through an elastic member to a fixed point on the aircraft.

3,833,191
POWERED AIRCRAFT EJECTION SEAT
Raymond C. Morton, 3030 Citrus St., Oxnard, Calif. 93030
Filed Nov. 22, 1971, Ser. No. 201,013
Int. Cl. B64d *25/10*
U.S. Cl. 244—122 A **9 Claims**



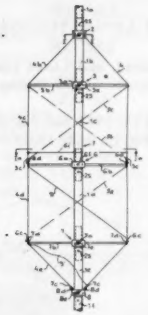
A device for enhancing the survival prospects of a pilot evacuating an aircraft over enemy-held territory by providing him with up to fifty miles of powered flight. A turbinepowered rotor blade assembly is attached to a conventional ejection seat, and is under the control of the pilot. By directing a portion of the seat's jet blast against a movable rudder member. the pilot is able to guide the unit in any desired direction. A feature of the concept resides in the provision of contrarotating helicopter rotor blades which may be telescoped to facilitate stowage and reduce the overall size of the unit. In the vent of malfunction the pilot may descend by conventional parachute.

3,833,192
SAFETY DEVICE FOR AIRPLANES LAND SAFETY
George Vitack; Rose Vitack; Josephine Vitack; George Spector, all of c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, New York, N.Y. 10007
Filed Nov. 13, 1972, Ser. No. 305,820
Int. Cl. B64d *17/80*
U.S. Cl. 244—139 **2 Claims**



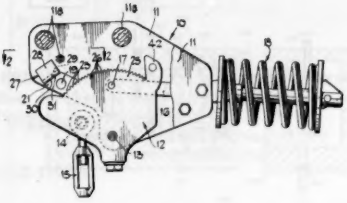
An airplane is provided with folded parachutes and means when actuated for causing the parachutes to be opened to lower the airplane safely to the ground in the event of engine failure or the like.

3,833,193
DEVICE FOR HOLDING OPERATING TOOLS AT ELEVATED HEIGHTS
August Benz, Algierstrasse 70, Zufikon, Switzerland
Filed Dec. 11, 1972, Ser. No. 314,233
Claims priority, application Switzerland, Dec. 15, 1971, 18309/71
Int. Cl. E04h *12/34*
U.S. Cl. 248—2 **27 Claims**



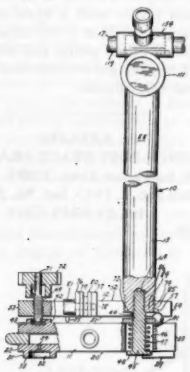
To hold and carry out working operations with a tool at a considerable height above ground level, such as in washing windows and glass surfaces, a holding device is formed of a plurality of coupled rod sections forming an elongated rod with the tool positioned on one end of the rod, a holding ring is located adjacent each of the opposite ends of the rod and support members are spaced axially along the rod between the holding rings. Wire ropes extend between the holding ring and the support members and are tensioned to increase the stability of the device.

3,833,194
PIPE SUPPORTS
Anthony John Salter, Woodsetton, England, assignor to Pipe Supports Limited, Tividale, Warley, Worcester, England
Filed Dec. 20, 1972, Ser. No. 316,817
Claims priority, application Great Britain, Jan. 4, 1972, 225/72
Int. Cl. F16l 3/00
U.S. Cl. 248—54 CS 4 Claims



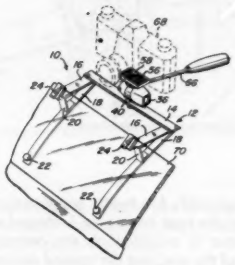
The specification discloses a constant tension pipe support comprising a lever pivoted to a frame and which may be locked in any one of a number of positions by engaging teeth on the lever with teeth on a locking member slidable between operative and inoperative positions, interengaging guide means being provided on the locking member and the support frame substantially to prevent rotation of the locking member in both its operative and inoperative positions.

3,833,195
AIR SURFACE GAUGE STAND
Joe Anton, 65-40180th St., Fresh Meadows, N.Y. 11365
Substitute for Ser. No. 237,746, March 24, 1972, abandoned.
This application June 28, 1973, Ser. No. 374,632
Int. Cl. G01b 3/22
U.S. Cl. 248—125 4 Claims



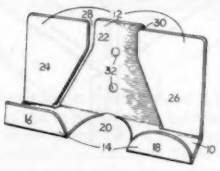
An air surface gauge stand of a type adapted to support an electronic measuring head or similar device for movement above a horizontal reference surface. The device includes a lower base having hollow feet to which a continuous supply of low pressure compressed air is fed to permit the lower base to be easily slid over the reference surface. An upper base is supported upon said lower base at points directly above the hollow feet in such manner that the upper platform is tiltably adjustable with respect to the lower platform about a substantially horizontal axis. A vertical supporting column extends from said upper base which supports a sliding clamp upon which the measuring instrument is mounted, the tiltable adjustment being employed to provide movement of the instrument relative to the lower base in which the vertical component thereof is extremely fine.

3,833,196
CAMERA SUPPORT
John M. Protzman, Dayton, Ohio, assignor to The Ever-Roll Manufacturing Corp., Dayton, Ohio
Filed July 10, 1972, Ser. No. 270,506
Int. Cl. G03b 17/56
U.S. Cl. 95—86 10 Claims



A camera support adapted to be attached to an automobile window or similar, plate-like surface. The support includes a base frame, a pair of clips adapted to engage over an upper edge of a window, and a pair of downwardly projecting legs adapted to engage the inner surface of the window. A camera platform is mounted on the base frame in a manner that provides for movement of the camera platform about at least two mutually perpendicular axes.

3,833,197
BOOK HOLDER
Boris Dyke, 249 Newton Dr., Willowdale, Ontario, Canada
Filed Dec. 18, 1972, Ser. No. 316,125
Claims priority, application Great Britain, Dec. 29, 1971, 60348/71
Int. Cl. A47b 97/08
U.S. Cl. 248—441 4 Claims

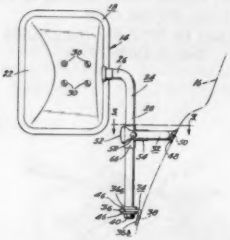


A book holder consists of a base having a pair of upstanding plates spaced apart a sufficient distance to receive the book cover; the base has a fence in front of the plates spaced therefrom a sufficient distance to accommodate the pages of the book. The fence adjacent the spine of the book tapers toward the base to facilitate turning a page.

3,833,198
VEHICLE MIRROR BRACKET ASSEMBLY

James W. Holzman, Haycock Twp., Pa., assignor to Delbar Products, Inc., Perkasie, Pa.

Filed Aug. 22, 1973, Ser. No. 390,500
Int. Cl. B60r 1/06
U.S. Cl. 248—476 3 Claims

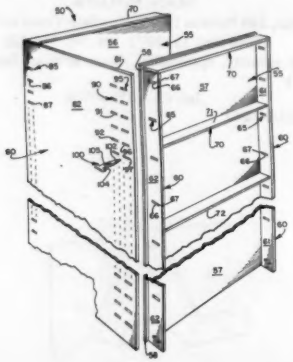


A bracket assembly for rigidly supporting a vehicle rear view mirror of the type having an L-shaped mirror support arm. The mirror is mounted on the outwardly extending horizontal leg of the arm, and the vertical downwardly extending leg of the arm is secured at its lower end to a first bracket member attached to the side of the vehicle and further supported by a second bracket member on the vehicle attached to the arm at a point vertically spaced from the first support member. Means are provided to permit a frictional rotational adjustment of the arm with respect to the bracket members.

3,833,199
END PLATE FOR CONCRETE FORMS

Allen B. Frake, 805 Huber Ln., Glenview, Ill. 60075

Filed Nov. 15, 1972, Ser. No. 306,691
Int. Cl. E04g 15/02
U.S. Cl. 249—33 1 Claim

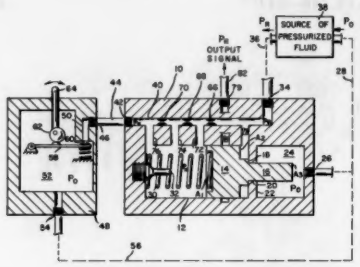


An end plate for a concrete form wherein the end plate is metal and has at least two arrays of apertures therein, the arrays being laterally spaced apart a distance slightly greater than the side walls of the concrete form. The apertures of each array are in a column so as to enable the end plate to be attached to the concrete form at a plurality of points. Also, disclosed are wedge pins which may be used to connect the end plate with the concrete form.

3,833,200
DOUBLE ACTING SNAP ACTION FLUIDIC SWITCH

Howard L. McCombs, Jr., South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.

Filed May 21, 1973, Ser. No. 362,128
Int. Cl. F16k 31/383; F15b 13/042
U.S. Cl. 251—35 8 Claims

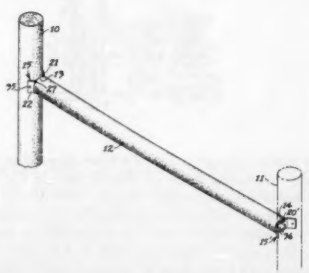


A two position fluid pressure responsive piston has a first effective area exposed to a reference fluid pressure, a larger second effective area exposed to a control fluid pressure, and an intermediate effective area exposed to a pressurized supply fluid from which the control fluid pressure is derived. The control fluid pressure is generated in a fluid passage connecting the pressurized supply fluid with the relatively lower reference fluid pressure and provided with first, second and third series flow restrictions and a variable area valve downstream therefrom and in series flow relationship therewith. A first passage is arranged in parallel with the second and third restrictions and a second passage is arranged in parallel with the third restriction. The control fluid pressure varies in response to opening of the variable area valve causing movement of the piston which, in turn, registers with the first and second passages to sequentially block the same causing a corresponding reduction in the control fluid pressure and a snap action of the piston to one of its two positions. Reverse movement of the piston with a hysteresis effect occurs in response to closing movement of the variable area valve which results in movement of the piston and subsequent opening of the second and first passages to cause snap action of the piston to the other of its two positions.

3,833,201
FENCE POST BRACE BRACKET

Joe E. Dill, Rt. 1, Lascassas, Tenn. 37085

Filed Feb. 5, 1973, Ser. No. 329,382
Int. Cl. E04h 17/14
U.S. Cl. 256—35 5 Claims



A bracket for connecting one flat end of an elongated brace member or pole to an upright fence post, having a round

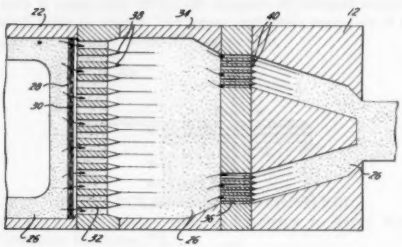
cross-section. The bracket is preferably an elongated unitary plate member having a middle section and flanges diverging from the ends of the inner surface of the middle section. The outer surface of the middle section is flat. Fastener members, such as nails or wood screws, are driven through holes in the middle section for securing the outer surface of the middle section flush against the flat end of the brace member and through holes in the flanges for securing the inner surfaces of the flanges to the fence post.

3,833,202

PRE-DIE CHAMBER FOR EXTRUSION APPARATUS

Milton A. Crystal, Fort Lee, N.J., assignor to American Polymers, Inc., Paterson, N.J.

Filed Dec. 7, 1972, Ser. No. 313,200
Int. Cl. B29b 1/04
U.S. Cl. 259—4 **9 Claims**



The present invention comprises a pre-die chamber for use in an extrusion system. The pre-die chamber is located immediately following the head of a conventional extruder. Following the pre-die chamber is a standard extrusion die. The structure of the pre-die chamber comprises a housing disposed longitudinally to the direction of extrusion. The housing exhibits a front end plate and a rear end plate. Both end plates comprise apertured transverse surfaces. In the case of the first surface, a screen and orifice combination of transverse members is utilized. The second surface is a single apertured plate having its apertures disposed transversely to the direction of extrusion. In addition, these apertures lie in the path of the die entrance.

Through the use of the present pre-dye chamber, extruded material that is passed therethrough will exhibit a cell structure bearing a high degree of similarity to that of natural wood.

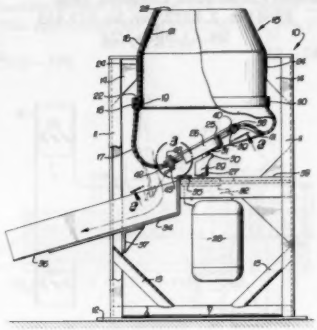
3,833,203

FLEXIBLE MIXER DISCHARGE

Leslie H. Garlinghouse, Pasadena, Calif., assignor to Garlinghouse Brothers Mfg., Inc., Los Angeles, Calif.

Filed Mar. 9, 1973, Ser. No. 339,721
Int. Cl. B01f 7/14
U.S. Cl. 259—29 **11 Claims**

A mixer type device has a container for materials built in two parts, the upper part being rigid and mounted on a frame and the lower part being flexible. A stiff disc at the center of the flexible part has a wobbler attached to it driven by a motor mounted on the frame below the container. For discharging material from the container a section of the flexible lower part is releasably connected to the disc so that when disconnected the material will be discharged downwardly into a delivery



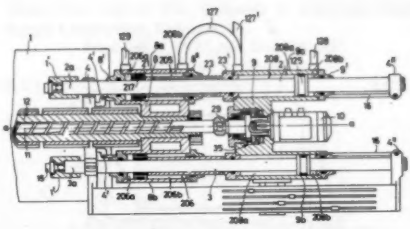
chute. After discharge the section can be reconnected to the disc and the container then made ready to receive a new load of material which is put in at the top.

3,833,204

MOLDING MACHINE INJECTION UNIT

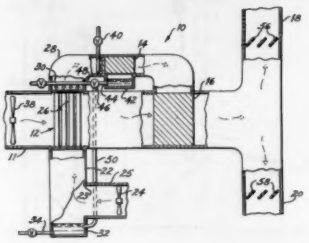
Karl Hehl, Siedlung 183, D-7291 Lossburg/Wurttemberg, Germany

Continuation-in-part of Ser. No. 186,674, Oct. 5, 1971, Pat. No. 3,738,618. This application Nov. 15, 1972, Ser. No. 306,723
Claims priority, application Germany, June 3, 1972, 2227133
Int. Cl. B01f 7/24
U.S. Cl. 259—191 **8 Claims**



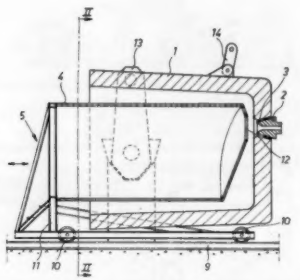
An injection unit for an injection molding machine in which selective ones of the hydraulic drive cylinders of the unit are provided with sleeve members on which the piston assemblies of those drive cylinders are mounted. These sleeves and those hydraulic cylinders which effect the movement of the injection unit relative to the injection molding machine are fastened to one of two supporting bridges while the hydraulic cylinders which effect a movement of a conveying worm of the unit relative to a plasticizing cylinder of the unit are fastened to the other of the supporting bridges. Each sleeve is moreover coaxially flanged to a respective one of the hydraulic cylinders which effect the movement of the injection unit relative to the injection molding machine, with the pistons of these cylinders being directly mounted on a respective one of the unit supporting struts.

3,833,205
APPARATUS FOR ELIMINATING WATER VAPOR FROM PROCESSED AIR
Donald McAnespie, La Salle, Quebec, Canada, assignor to Midland-Ross Corporation, Cleveland, Ohio
Filed Feb. 2, 1972, Ser. No. 212,983
Int. Cl. B05b 1/28
U.S. Cl. 261—133 4 Claims



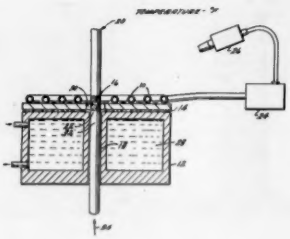
Apparatus and method for eliminating water vapor from processed exhaust air of a dryer. The exhaust air is placed in indirect heat exchange relationship with ambient air after which it is cooled by passing through a water shower. The cooled exhaust is then mixed with the ambient air which has passed through the heat exchanger and at least a portion of the mixture is discharged to the atmosphere.

3,833,206
PROTECTIVE DEVICE FOR USE IN THE MAINTENANCE OF FOUNDRY LADLES
Arvi Makynen, Imatra, Finland, assignor to Ovako Oy, Helsinki, Finland
Filed Sept. 11, 1973, Ser. No. 396,284
Claims priority, application Finland, Sept. 20, 1972, 2584/72
Int. Cl. F27d 23/00
U.S. Cl. 266—1 R 10 Claims



A device for use in the maintenance of foundry ladles comprises a support structure which includes a pair of upstanding beams adapted to receive and support the carriers of a foundry ladle, and an intervening supporting stage adapted to support the ladle from its carriers in a generally horizontal position. An L-shaped carriage is provided with a horizontal portion having wheels movable along tracks disposed below the horizontally supported ladle, and with a vertical portion to which an elongated protective barrel structure, having insulating walls, is attached. The protective barrel structure has a generally oval configuration and an open end which is attached to the vertical carriage portion, and the barrel structure extends in a generally horizontal direction for insertion into and out of the ladle as the carriage is moved. The interior dimensions of the barrel structure are sufficiently large to permit an inspector to enter the barrel structure via its open end and to walk along the barrel structure to its opposite end, which is closed except for a service opening, to permit the inspector to service the bottom of the ladle when the protective barrel has been moved into the ladle.

3,833,207
APPARATUS FOR ALLOY MICROSTRUCTURE CONTROL
Robert E. Allen, and Clyde D. Calhoun, both of Cincinnati, Ohio, assignors to General Electric Company, Cincinnati, Ohio
Division of Ser. No. 165,030, July 22, 1971, Pat. No. 3,772,090. This application Mar. 22, 1973, Ser. No. 343,944
Int. Cl. C21d 1/00
U.S. Cl. 266—2 R 3 Claims

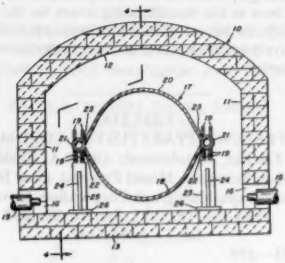


A columnar grain structure and improved high temperature, high mechanical strength properties are provided in a metal article by solid state method. First the article is formed in a manner which places the metal microstructure in a condition of dislocation density which results in the metal microstructure undergoing relatively rapid transformation to relatively large grains when heated in the range of about 50 to less than 100 percent of the metal incipient melting temperature in degrees Rankine. Then the article so preconditioned is progressively and selectively heated in that temperature range but below the incipient melting temperature of the metal. This is accomplished by heating the article in a narrow zone. Such zone traverses the article, as a result of relative movement between the article and the source of heat energy, from the cooler portion and in the direction desired for growth of the principle axis of the columnar grains, with the zone having a thermal gradient of at least about 500°F/in. A preferred form of a processed wrought article is characterized by grains of at least about 2,000 microns in diameter and a length to diameter ratio of at least about 10.

3,833,208
MUFFLE FURNACE
Poul Andersen, Wallingford, Conn., assignor to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.
Filed May 4, 1973, Ser. No. 357,420
Int. Cl. C21d 9/56
U.S. Cl. 266—3 R 6 Claims

A muffle furnace is disclosed which includes an elongated furnace having an elongated chamber or muffle contained

therein with the muffle constructed of upper and lower segments connected at their sides to an elongated support which



in turn is supported within the furnace by vertical supports spaced along its length. The upper and lower segments of the muffle are catenary-shape in cross section.

3,833,209

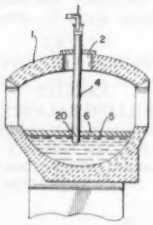
APPARATUS FOR REFINING OF STEEL

Yi-Chung Chang, Murrysville, Pa., assignor to Berry Metal Company, Harmony, Pa.

Filed Apr. 4, 1973, Ser. No. 347,944

Int. Cl. C21c *7/06*

U.S. Cl. 266—34 L **22 Claims**



In a steel making apparatus, an oxygen injection lance having a copper tip section to which is attached a submersion nozzle for insertion into a molten bath of steel, the submersion nozzle including a short threaded copper section attached to the lance tip and a lower steel tube welded to the copper section and having extending thereabout fastener material for holding a layer of refractory material about the lower metallic tube of steel, the joint between the lance tip and the submersion nozzle being sealed by a refractory cement. The method involves the use of this submersion nozzle below the surface of the molten bath of steel, the nozzle being attached to the water-cooled lance which enters the furnace from its roof or side wall above the bath surface.

3,833,210

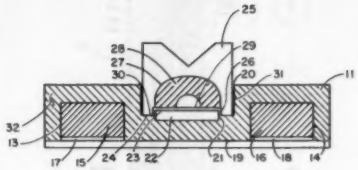
PIPE HOLDING ATTACHMENT FOR C-CLAMPS AND VISES

James Ivy Kotter, 3120 49th St., Metairie, La. 70001

Continuation-in-part of Ser. No. 126,471, March 22, 1971. This application Nov. 6, 1972, Ser. No. 304,275

Int. Cl. B25b *5/16*

U.S. Cl. 269—276 **8 Claims**



Utilization and attachment of two V-type units, oppositely positioned onto a conventional C-clamp, a machinist's vise, a woodworker's vise and other clamping devices, enables positive clamping of cross-sectionally curved objects, such as pipe and tubing. Two cross-sectionally curved objects may be positioned and positively held at any angle with respect to each other by use of alternate embodiment of invention.

Other embodiments of invention utilizing magnetic forces provide 360° jaw rotation and permit rapid interchange of jaws of various sizes and configurations for use with either vises or C-clamps.

3,833,211

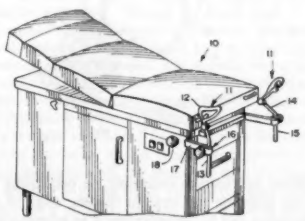
CLAMPING MECHANISM FOR ADJUSTING STIRRUP ON A MEDICAL EXAMINATION TABLE

Floyd F. Mueller, Two Rivers, and Clarence J. Aulik, Manitowoc, both of Wis., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed Feb. 5, 1973, Ser. No. 329,452

Int. Cl. A61g *13/00*

U.S. Cl. 269—328 **6 Claims**



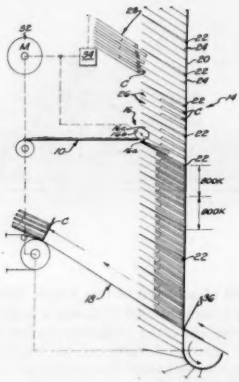
A clamping mechanism for the support rod of a stirrup includes a laterally extensible bar providing a bearing surface which engages the rod and a flexible metal strap extending from the distal end of the extension bar in partial wrapping engagement about the rod. A hand wheel draws the end of the strap toward the extension bar, thereby wedging the support rod in frictional engagement with the bearing surface and clamping the rod.

3,833,212

SIGNATURE COLLATING SYSTEM AND METHOD

James Chapman Wise, Easton, Pa., assignor to Harris-Intertype Corporation, Cleveland, Ohio

Filed Sept. 11, 1972, Ser. No. 288,110
Int. Cl. B65h 39/02
U.S. Cl. 270—58 2 Claims



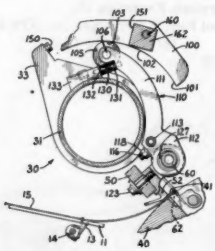
A signature delivery and collating system which includes an inserter mechanism for inserting preprinted cards or sheets into pockets of a collator into which signatures are also fed from a continuous stream of overlapped signatures.

3,833,213

MEANS FOR OVERCOMING FAN-OUT IN LITHOGRAPH PRESS

Walter S. Smith, Naperville, Ill., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Apr. 17, 1972, Ser. No. 244,387
Int. Cl. B65h 9/12
U.S. Cl. 271—254 9 Claims



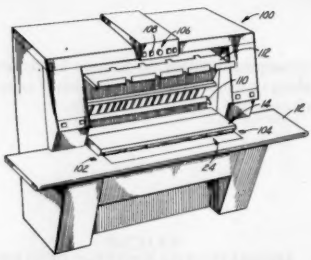
An infeed mechanism including an oscillating transfer assembly for gripping the straight leading edge of a sheet in a sheet-fed press and for transferring it to grippers on a rotating cylinder in a bowed condition in order to overcome the tendency for the trailing portion of the sheet to spread or fan-out as it is acted upon by the press cylinders. The transfer assembly has gripper pads which are in general alinement but which are moved into the locus of a bow during a stroke of swinging movement for progressively deforming the leading edge of the sheet into a bow from the time that the sheet is engaged to the time that the sheet is released to the grippers on the rotating cylinder. In the preferred embodiment the gripper pads on the transfer assembly are mounted upon a pad bar which is progressively bowed in one direction as the transfer assembly is swung into its sheet pick-up position and then progressively restored to its straight position and into a bow of opposite direction as the transfer assembly is swung to the position where the sheet is released to the grippers on the constantly rotating cylinder. Means are provided for varying the amount of bow in the bar including levers on the transfer assembly which are actuated by a cam and cam follower which move relatively to one another as the transfer assembly swings back and forth.

3,833,214

SHEET FEEDING APPARATUS FOR COPY MACHINE

Robert F. Zawiski, Lincolnwood; Albert A. Crider, Palatine, and Stephen Ernohazy, Mount Prospect, all of Ill., assignors to Addressograph-Multigraph Corporation, Cleveland, Ohio

Filed Apr. 11, 1973, Ser. No. 350,239
Int. Cl. B65h 5/06
U.S. Cl. 271—270 3 Claims



A copy machine with a pair of feed-in rollers for feeding, in superposed relation, a sensitized copy sheet and an original document to be copied into the machine. A pair of manually operable switches at either end of the feed-in portion of the machine are present to allow the speed of rotation of the feed-in rollers to be reduced when either switch is actuated. The reduction in speed allows an operator to manipulate the copy sheet and original more easily for purposes of aligning the two sheets as they enter the rollers. The rotation of the rollers is restored to the original speed by activating either of the switches.

3,833,215

ROLLING BALANCER

Francisco J. Isdith, Brooklyn, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y.

Filed June 13, 1973, Ser. No. 369,780
Int. Cl. A63b 23/04
U.S. Cl. 272—60 R 1 Claim

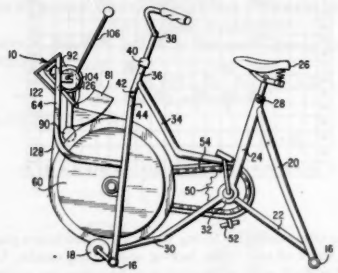
A rolling balancer formed of two wheels connected together by an axle to which a U-shaped bar is attached perpendicular to the axle. The bar extends horizontally beyond the wheels

and is bent at each end to form vertical handle members which are grasped by the user standing on the bar and balancing himself on the device.

3,833,216
PEDAL ACTUATED EXERCISING DEVICE WITH ADJUSTABLE LOAD CONTROL

Robert E. Philbin, 7543 Morningstar Ave., Harrisburg, Pa. 17112

Filed Feb. 23, 1973, Ser. No. 335,333
Int. Cl. A63b *23/04*
U.S. Cl. 272—73 **11 Claims**

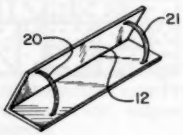


An exercising device having a stationary frame assembly with handlebars and a seat so as to generally resemble a conventional bicycle, has a rotatable wheel actuated by pedals and a friction belt engaging a portion of the wheel for applying a braking load on the wheel. A load control mechanism is manually operated between positions for varying the load applied by the belt and a retainer device acting on the load control mechanism precludes an inadvertent and/or actual movement thereof from its set controlling position.

3,833,217
PRACTICE SLEEVE

Daniel F. Greaney, 85 Chesbrough St., West Roxbury, Mass. 02134

Filed July 11, 1973, Ser. No. 378,315
Int. Cl. A63b *69/40*
U.S. Cl. 273—26 B **4 Claims**

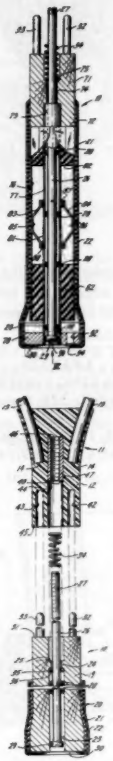


A practice sleeve having an elongated V-shaped trough configuration which is slipped over a conventional baseball bat and prevents the ball from going any great distance, due to its V shape, if the ball comes in contact with the sleeve in anything but direct center. The sleeve also absorbs the greater part of the energy from a pitched ball when it strikes dead center preventing the ball from going any considerable distance. The sleeve also forces the player to swing the bat in a direct equal plane.

3,833,218
GAME RACKET

Richard E. Frenkel, 17 Kingston Rd., Scarsdale, N.Y. 10583, and Allan E. Schwartz, 3 Bristol Pl., Yonkers, N.Y. 10710

Filed Mar. 14, 1973, Ser. No. 341,156
Int. Cl. A63b *49/08*
U.S. Cl. 273—73 J **15 Claims**



A racket for use in games such as tennis, badminton, squash, paddle ball, etc. having a head and a handle detachably connected to said head at a throat. The head comprises a frame defining a stringing or ball contact area and a throat connected with the frame. The handle has at least one partially threaded bolt axially extending the length of said handle, with the threaded portion extending beyond one end thereof. An internally threaded insert in carried by said throat for receiving the bolt so that the handle may be secured to and detached from the head. Guide means are provided on the handle for engagement with the throat so that the handle will be properly aligned with the head. Grip expanding means may be carried within a partially hollow handle so as to vary the diameter of the handle.

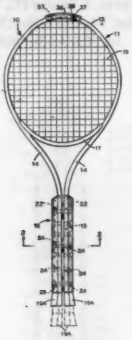
3,833,219
RACKET WITH ADJUSTABLE HANDLE

Jesse W. Dean, 3878 Cannon Pl., Bronx, N.Y. 10463

Continuation of Ser. No. 196,425, Nov. 8, 1971, abandoned. This application Aug. 27, 1973, Ser. No. 391,626
Int. Cl. A63b *49/08*
U.S. Cl. 273—75 **4 Claims**

A racket for tennis, squash, badminton or similar sports, which includes a handle of adjustable length; a handle grip of

adjustable perimetric size; means for adjusting the weight of the handle and/or the head portion of the racket, wherein the several adjustable features may be coordinated to suit the



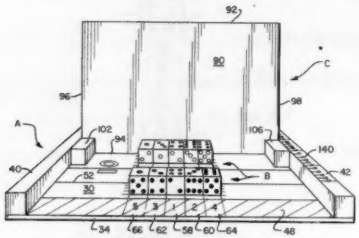
requirements of a particular user of the racket and to optimize his playing ability; the adjustments being simply and readily made by the user with the aid of common hand tools.

3,833,220

DECISION MAKING FOOTBALL GAME

Dennis Raymond Schurdell, 255 Franklin Dr., Berea, Ohio 44017

Filed May 8, 1972, Ser. No. 250,867
Int. Cl. A63f 9/14
U.S. Cl. 273—94 R **21 Claims**



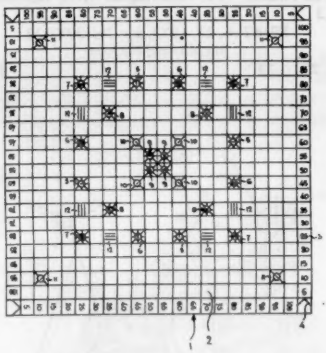
A football game including a game board dimensioned as a miniature football field and including five longitudinally extending game playing zones thereon. Ten game members, five linemen and five backfield men having a plurality of member movement indicators thereon comprise each team and are selectively positionable in the playing zones for a predetermined number of separate plays. In a typical play, each player rolls his ten game members onto the game board in full view of the opposing player in order that the players may each observe their opponent's possible plays. A screen which blocks each player's view of the opposing team is placed on the game board to extend along the "line of scrimmage" in order that the players may arrange their game members within the playing zones according to their relative offensive or defensive strengths and weaknesses. A football shaped element is employed by the offensive team to denote which of the game members will enter into a specific play with play being initiated by removing the screen from the game board. Advance or loss of the offensive team is based upon the differences in the member movement indicators of those offensive game members designated to enter play and the defensive team game members in the the same playing zones. A score board is also provided to keep track of game progress and to determine other game variables so as to eliminate as much pure chance from the game as is possible.

3,833,221

BOARD GAME APPARATUS

Adrianus Gijsbertus Van Tol, Mimosastraat 31, Den Haag, Netherlands

Filed Apr. 26, 1973, Ser. No. 354,657
Int. Cl. A63f 3/00
U.S. Cl. 273—134 C **12 Claims**



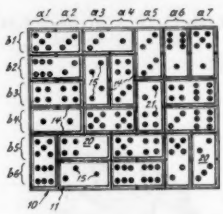
A game comprising a playing surface divided into a plurality of areas, some of said areas having identifying marks. Valued pieces identified as to value and as to location are positioned on particular marked areas. A plurality of route following pawns are provided for each player for moving on the playing surface along a particular route. The route of the pawns is determined by route charts, each chart indicating portions of the route to be followed. Points are accumulated by the players when their pawns capture an opponent's pawns or valued pieces during their movement.

3,833,222

PEGGED BOARD PUZZLE

George Castanis, New York, N.Y., assignor to Kohner Bros., Inc.

Filed Sept. 17, 1973, Ser. No. 398,137
Int. Cl. A63f 9/10
U.S. Cl. 273—156 **9 Claims**



A puzzle is comprised of a playing board of a size capable of accommodating on its surface a plurality of playing pieces. Projecting from the surface of the board are a plurality of pins or pegs arranged in individual groupings or patterns of varying numbers of pegs and arrayed throughout a plurality of intersecting columns and rows with the spacing between adjoining patterns being uniform both in the column and row direction. The playing pieces are rectangular and each is perforated in individual groupings or patterns corresponding to and matching the patterns of the aforesaid pegs. Each piece has perforations representing a pair of individual perforation patterns, the spacing between the perforation patterns being the

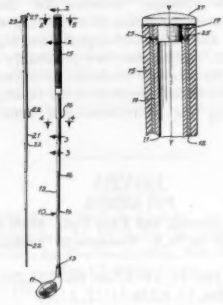
same as the spacing between adjoining peg patterns on the playing board so that a playing piece may be placed flush on the surface of the board only at a location wherein the perforation patterns on the playing piece match with and correspond to the patterns of two adjoining peg patterns. The combination of perforation patterns on each playing piece is different from that of every other playing piece and the number and arrangement of peg patterns on the board is designed so as to just accommodate every one of the playing pieces when correctly positioned on the board.

3,833,223

GOLF CLUB ASSEMBLY HAVING INTERCHANGEABLE INNER FLEX MEMBERS

Robert A. Shulkin, 24122 E. Sprague, Liberty Lake, Wash. 99019

Filed July 9, 1973, Ser. No. 377,526
Int. Cl. A63b *69/36*
U.S. Cl. 273—194 R **2 Claims**



An adjustable shaft for golf clubs comprises a hollow elongated shaft fixed to a club head. The shaft is open at one end to receive an elongated flex member. The flex member is characterized by a predetermined degree of flexibility along its length to impart a specific reflex to the shaft along its length. Adjustability of flex along the club shaft enables the golfer to determine the degree of shaft flexibility to suit his specific requirements.

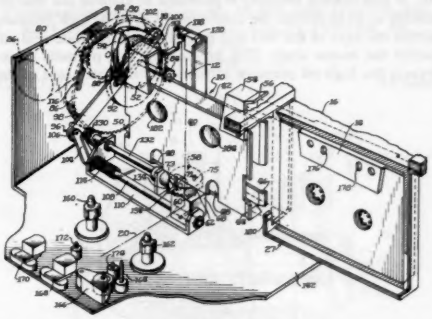
3,833,224

TAPE RECORDER WITH CASSETTE INVERTOR

Robert Haake, Pasadena, Calif., assignor to Bell & Howell Company, Chicago, Ill.

Continuation of Ser. No. 50,407, June 29, 1970, abandoned. This application Jan. 12, 1973, Ser. No. 322,995The portion of the term of this patent subsequent to Sept. 7, 1988, has been disclaimed.
Int. Cl. G11b *5/00*
U.S. Cl. 360—92 **15 Claims**

A tape recorder-reproducer having mechanical means for automatically flipping a tape cassette to reproduce each of two separately playable record tracks carried by the tape cassette. The mechanical means includes a mechanism for lifting a tape cassette away from a play station where one of the record tracks was in position for reproduction to a position substantially perpendicular to the play station, for rotating the tape cassette approximately 180° to invert its orientation and



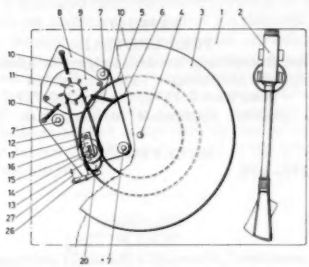
for returning the tape cassette to the play station thereby positioning the second record track for reproduction.

3,833,225

DRIVING MECHANISM FOR THE TURNTABLE IN RECORD PLAYERS

Karl Albin Bertil Pettersson, Motala, Sweden, assignor to Luxor Industri Aktiebolag, Motala, Sweden

Filed Sept. 25, 1972, Ser. No. 291,525
Claims priority, application Sweden, Sept. 27, 1971, 12154/71
Int. Cl. G11b *19/26*
U.S. Cl. 274—9 A **3 Claims**



A driving mechanism for the turntable in record players having a reversible motor is provided in which reversal of the direction of rotation of the motor automatically changes the speed of rotation of the turntable.

3,833,226

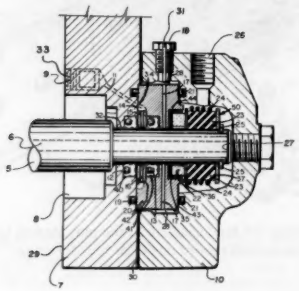
SEAL APPARATUS FOR OIL DRIVEN GEAR MOTOR

Gary Paul Kerns, Fenwick, and Raymond L. McElroy, Craigsville, both of W. Va., assignors to Standard Hydraulics Service of Charleston, Inc., Craigsville, W. Va.

Filed Feb. 5, 1973, Ser. No. 329,637
Int. Cl. F16j *15/38, 15/40*
U.S. Cl. 277—3 **10 Claims**

In an oil driven gear motor of the type having a high oil pressure portion and a low pressure portion and a drive shaft rotatably mounted therein, a seal apparatus is provided. The seal apparatus is formed in a motor housing having oil passageways formed therein extending from the high and low oil pressure portions of the motor to an intermediate seal member. The intermediate seal member is positioned around

the rotatable motor shaft, located intermediate two seal rings. The intermediate seal member contains oil ducts which communicate with the aforementioned oil passageway of the motor. A seal seating member is provided to enclose the seal assembly so as to permit the confinement of oil at high pressure within the area of the two seal rings and intermediate seal adjacent the motor shaft. This pressurized seal partially counteracts the high oil pressure present on the motor side of the



seal thus yielding a more oil impervious seal. Also provided is an auxiliary motor housing having an orifice therethrough to allow the introduction of water therein. The water flows into an axial bore extending within the motor shaft. Water seal means are associated with the seal seating member to prevent water leakage around the shaft in the area of the oil seal rings. Water and oil leak detection means are also provided in the area of the seal seating member to allow visual determination of seal integrity.

3,833,227

PRESSURE SEAL

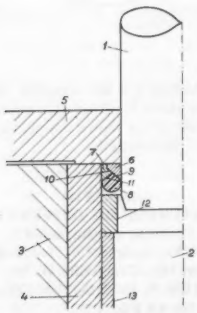
Jan Nilsson, Robertsfors, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Mar. 1, 1972, Ser. No. 230,727

Claims priority, application Sweden, Mar. 15, 1971, 3281/71

Int. Cl. F16j *15/56*

U.S. Cl. 277—176 **2 Claims**



A high pressure seal for sealing between a movable piston and the wall of a pressure chamber is formed of two rings which have oppositely sloping inward directions forming a V within which a resilient sealing strip fits. The two rings have sloping mating faces directed inwardly towards the axis of the cylinder.

3,833,228

STACKABLE SEALING MECHANISM

Howard E. Gilliam, Sr., North Ton Awanda, N.Y., assignor to Chenprene, Inc., Beacon, N.Y.

Filed July 19, 1973, Ser. No. 380,903

Int. Cl. F16j *15/32*

U.S. Cl. 277—205 **8 Claims**

There is disclosed a sealing design which allows seal members to be stacked upon each other in a manner which substantially reduces leakage, reduces the friction which generally accompanies expansion of a seal ring when pressure is applied thereto and offers self-aligning and high-load bearing properties. The sealing member preferably comprises at least two or more stacked seal members having similar designs which allow the individual members of the sealing mechanism to interlock giving the aforementioned benefits and advantages.

3,833,229

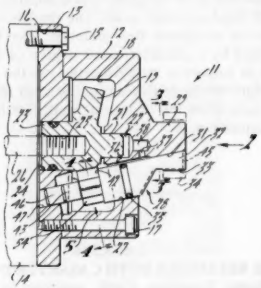
PIN ARBOR

George Hohwart, Howell, and Paul Toth, Allen Park, both of Mich., assignors to N.A. Woodworth Company, Detroit, Mich.

Filed Jan. 10, 1973, Ser. No. 322,292

Int. Cl. B23b *31/12, 31/40*

U.S. Cl. 279—1 J **8 Claims**

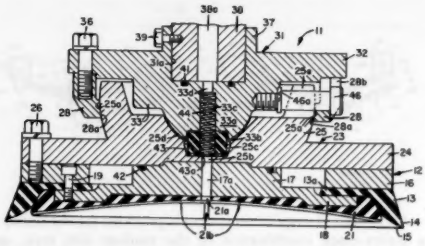


A workpiece-supporting arbor having a body with circumferentially spaced inclined pins the outer ends of which are engageable with the workpiece. A disc-shaped pin actuator connected to a draw-bar has slots through which the pins extend, the pins having shoulders engageable by this actuator during operation. The pins are removable from the front of the body by application of a tool such as a screwdriver and rotation of the pins. Locating surfaces on the pins permit proper re-insertion, the surfaces being so shaped as to permit pin adjustment for workpiece irregularities. The pins have sufficient cross-sectional area in the portions straddled by the actuator slots to provide ample tensile strength during operation.

3,833,230
VACUUM CHUCK

Burton A. Noll, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Sept. 13, 1973, Ser. No. 396,751
Int. Cl. B23b *31/30*
U.S. Cl. 279—3 **10 Claims**

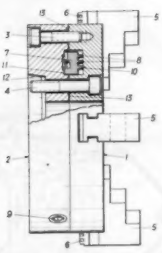


A vacuum chuck for picking up and handling articles having relatively flat or slightly curved surfaces to be contacted by the vacuum cup of the chuck with a modified form of gimbaling arrangement permitting self-leveling or rocking floating movement of the chuck and the suction cup to adjust to a contacted surface when a preselected value of vertical force is applied to the chuck, and a locking or clamping feature to prevent floating movement or rocking motion of the chuck and vacuum cup when said preselected force is absent or terminated.

3,833,231
CHUCK

Karl Maier, 186 Heide, Hallein, Austria

Filed Jan. 31, 1973, Ser. No. 328,413
Claims priority, application Austria, Feb. 1, 1972, 793/72
Int. Cl. B23b *31/16*
U.S. Cl. 279—116 **1 Claim**

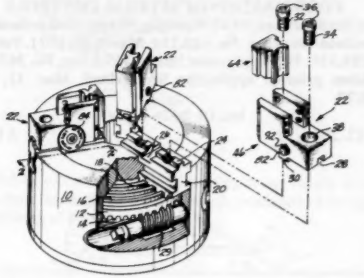


A front plate is formed in one surface with a first annular groove. A plurality of jaws are radially guided in said front plate. A cover plate has a surface which contacts said one surface and is formed with a second annular groove, which registers with said first annular groove. Screws connect said cover plate to said front plate. Said contacting surfaces of said front plate and cover plate lie in a single plane. Centering means are provided, which center said front plate and said cover plate relative to each other and consist only of a gear ring, which extends into said first and second annular grooves and is rotatably mounted therein and carries a scroll, which is in engagement with said jaws so that said gear ring is rotatable to radially adjust said jaws.

3,833,232
CHUCK JAW INSERT ASSEMBLY

Alvin J. Behrens, Kent, Wash., assignor to The Cleveland Twist Drill Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 45,499, June 11, 1970, Pat. No. 3,679,221. This application June 23, 1972, Ser. No. 265,761
Int. Cl. B23b *31/10*
U.S. Cl. 279—123 **5 Claims**

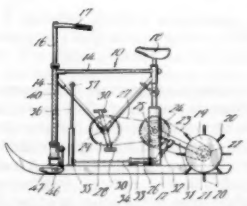


A top jaw and insert for use in connection with chucks of turning machines, or latches, are disclosed. Each insert is held in a recess in a top jaw and precisely positioned relative to said top jaw by: the outer end portion of the sidewalls forming the recess are precisely machined to provide parallel sidewall surfaces; additional mounting surfaces are provided on the opposite end portions of said sidewalls and located normal to the sidewall surfaces; an insert is provided with sidewalls to slidingly fit into said recess; the insert is provided with a head of a size to arrest further movement therepast of the insert into the recess; a machined under surface is provided on said head to mate with the surfaces at the end of the sidewalls; and set screws are threadingly mounted into said sidewalls, engage grooves in the insert, and upon rotation thereof, the set screws urge the insert and the machined surface thereof, on the underside of the head thereof, against the base surfaces and on the sidewall. Also, each of the sidewalls of the top jaws has mounting surfaces at each end portion thereof so that the insert can be carried by either end portion of the sidewall and carried by the top jaw.

3,833,233
SLEIGH

Kenichi Sugiyama, 1236-7-506 Edamachi, Yokohama, Japan

Filed Jan. 12, 1973, Ser. No. 323,225
Claims priority, application Japan, Jan. 17, 1972, 47-6805
Int. Cl. B62b *17/06*
U.S. Cl. 280—12.14 **7 Claims**



A sleigh and the like snow vehicle comprises a runner mounting an improved drive and steering structure. The structure has a drive mechanism which includes a vertically mova-

ble shaft on which a pair of bladed drive wheels are rotatably for movement therewith so as to cause the blades on the drive wheels selectively to engage and to clear the surface of snow or ice. The structure also has a steering mechanism which includes a gearing operatively connected to a steering rod and steering blades hung from opposite ends of a cross bar pivoted by the gearing.

3,833,234

VEHICLE, IN PARTICULAR FOR TRAINING IN THE COORDINATION OF SEVERAL CONTROLS

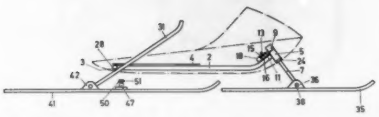
Hermann Schreiber, 9545 Waengitg, Wangi, Switzerland

Continuation of Ser. No. 128,714, March 29, 1971, Pat. No. 3,759,537. This application June 4, 1973, Ser. No. 367,010

Claims priority, application Switzerland, Mar. 31, 1970, 4714/70

Int. Cl. B62b *13/04*

U.S. Cl. 280—16 **6 Claims**



A vehicle for training in the coordination of various controls provided with at least travelling units containing skids, wheels or floats, having at least one seat, each of the travelling units being capable of being lifted or lowered for tilting about its longitudinal and/or transverse axis and at least one travelling unit being adapted to swivel about a vertical axis.

3,833,235

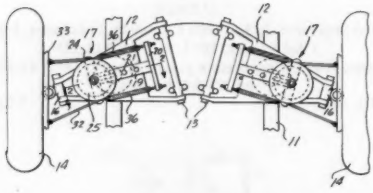
WHEEL CAMBER-MAINTAINING ASSEMBLY

Doyle H. Worsham, Box 231, Boaz, Ala. 35957

Filed June 15, 1973, Ser. No. 370,318

Int. Cl. B60g *3/00*

U.S. Cl. 280—94 **14 Claims**



A camber-maintaining structure for a motor vehicle front wheel. The structure consists of a T-shaped bracket rigidly attached to the horizontally pivoted A-frame of the vehicle. A rigidly clamped cross bar and pulley are slidably and pivotally connected to the stem of the bracket. A cable is engaged around the pulley and its ends are attached to the backing plate of the brake drum of the adjacent wheel. A pair of coiled springs connect the ends of the cross bar to the ends of the head portion of the bracket and act to bias the wheel toward its normal camber position. A sprocket wheel and sprocket chain may be used in place of the pulley and cable. In vehicles not employing a pivoted A-frame, the bracket may be attached directly to the vehicle frame.

3,833,236

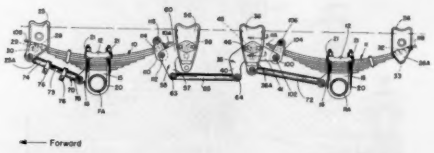
EQUALIZED SUSPENSION SYSTEM FOR A TANDEM AXLE VEHICLE

Robert W. Davis, Ozark, and James C. Ward, Springfield, both of Mo., assignors to A. J. Industries, Inc., Los Angeles, Calif.

Filed July 16, 1973, Ser. No. 379,738

Int. Cl. B60g *5/04*

U.S. Cl. 280—104.5 B **3 Claims**



An equalized suspension system is provided for the trailer of a trailer-truck combination of the tandem axle type, and which is mounted on each side of the trailer near the rear thereof. The suspension on each side of the trailer includes independent semielliptic leaf springs mounted in tandem relationship one behind the other, and which are respectively connected at their midpoints to the front and rear axles of the trailer. The remote ends of each spring are supported in respective brackets which, in turn, are secured to the frame of the trailer. Two equalizer support brackets are provided between the adjacent ends of each pair of springs, and two bell cranks are respectively supported in the equalizer support brackets. A tension bar intercouples the bell cranks. The adjacent ends of the springs are supported on bearing pads which are pivotally mounted in shackles. The shackles, in turn, are pivotally mounted to the respective bell cranks.

3,833,237

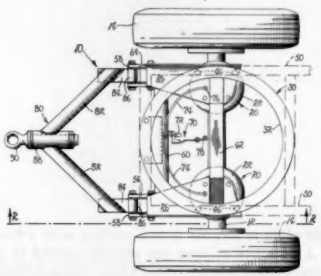
FRONT AXLE ASSEMBLY FOR A FULL TRAILER

Phillip J. Sweet; Buck C. Hamlet, and David L. Sweet, all of Fresno, Calif., assignors to American Carrier Equipment, Fresno, Calif.

Filed Oct. 24, 1972, Ser. No. 299,715

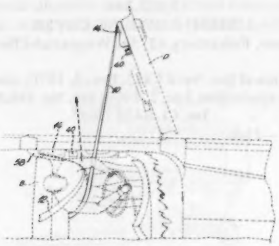
Int. Cl. B62d *53/00*

U.S. Cl. 280—125 **5 Claims**



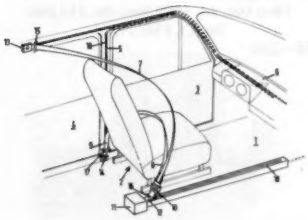
An improved front axle assembly for a full trailer characterized by a pair of laterally spaced single convolute air springs disposed in vertical alignment between a wheel-supported axle and a turntable adapted to support one end of a trailer, and a pair of cantilevered leaf springs extended between the axle and a forwardly disposed hanger integrally related with said assembly.

3,833,238
SAFETY BELT SYSTEM
Maurice Liard, 276 DeSalaberry, Joliette, Quebec, Canada
Filed Sept. 27, 1972, Ser. No. 292,717
Int. Cl. B60r *21/02*
U.S. Cl. 280—150 SB **5 Claims**



There is disclosed a safety belt wound on a spring reel at the aft end of the door, which keeps the belt under tension, and blocked by a clamping device when the door is closed, to ensure wear of the belt and effect its locking automatically. The blocking device comprises elements which come in contact when the door is shut and clamp the belt therebetween.

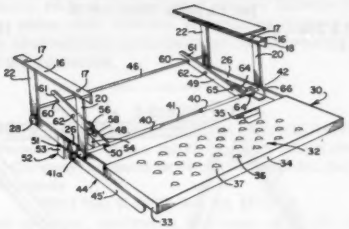
3,833,239
SEAT BELT
Willem Frans Coenen, Prinses Marielaan 26, Wassenaar, Netherlands
Filed Nov. 7, 1972, Ser. No. 304,345
Claims priority, application Netherlands, Nov. 8, 1971, 7115345
Int. Cl. B60r *21/02*
U.S. Cl. 280—150 SB **2 Claims**



A seat belt for a motor vehicle with automatic retraction means, so that in the stored position the belt clears the doorway.

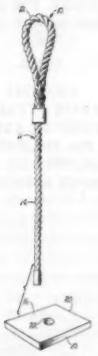
3,833,240
RETRACTABLE STEP FOR USE WITH TRAILERS, MOTOR HOMES, OR OTHER VEHICLES
Raywood C. Weiler, 17586 Vine St., Fontana, Calif. 92335
Filed Nov. 17, 1972, Ser. No. 307,493
Int. Cl. B60r *3/02*
U.S. Cl. 280—166 **10 Claims**

A retractable step mounted on the vehicle below the door, which step is pivotally supported to move in a horizontal plane from a retracted out-of-the-way position under the vehicle body to a forwardly extending step-on position which is laterally and forwardly of the door and below the door and is provided with means for releasably locking the step in either



retracted or extended position, the step being totally disconnected from the door and operable independently of the opening or closing of the door.

3,833,241
STOWABLE TIEDOWN ATTACHMENTS FOR PICKUP TRUCK BODIES
Adrian J. Acosta, 16891 S. Elm Ave., Caruthers, Calif. 93609
Filed June 14, 1972, Ser. No. 262,780
Int. Cl. B60p *7/00*
U.S. Cl. 280—179 A **8 Claims**



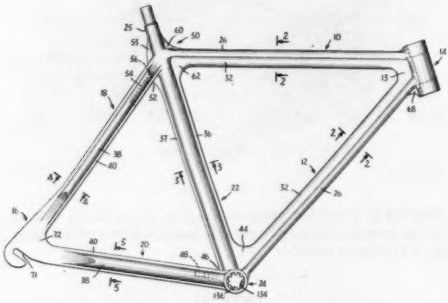
Disclosed is a stowable tiedown attachment for pickup truck beds consisting of a loop of rope with a tail, and a bored rectangular plate. The plate is carried on the tail by inserting the tail through the bore and then forming a knot in the tail below the plate. The bore is just large enough to pass the rope tail and too small to pass the loop or the knot, and the plate is thus captured between the loop and the knot. The tiedown attachment is placed in a stake well in the pickup truck body by either passing the tail unknotted through a hole in the bottom of the well and then affixing a knot in the tail below the hole, or in the bodies of other designs, by mounting the plate on the tail held by a knot, and then passing the plate through the top opening of the well by angling the plate downward. When the plate is in the well it is disposed horizontally so that when the rope is drawn upwardly the plate catches the sides of the well and prevents removal of the tiedown attachment from the well.

3,833,242

BICYCLE FRAME

William A. Thompson, Jr., Toms River, N.J., assignor to Original Plastic Bike, Inc., New York, N.Y.

Filed Dec. 29, 1972, Ser. No. 319,843
Int. Cl. B60k *19/02, 19/16*
U.S. Cl. 280—281 **15 Claims**



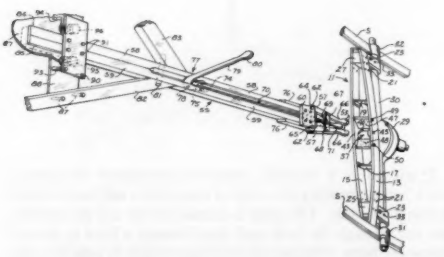
A bicycle frame formed as a unitary plastic molding is, in outline, a forwardly-upwardly sloping parallelogrammatic structure having a diagonal seat post connected between the middle diagonal corners. The top and front struts are formed of a semicylindrical portion and a radial rib portion protruding perpendicularly from the face opposite the semicylindrical face of the semicylindrical portion; the back and bottom braces are formed of a semicylindrical portion and a bar portion extending beyond the flat face of the semicylindrical portion and in the plane thereof. The entire frame is molded in one piece with a hard exterior skin covering a structural foam interior.

3,833,243

TRAILER HITCH FOR ATTACHMENT TO TOW VEHICLE AXLE

Carl J. H. Hanson, P.O. Box 312, Buffalo, S. Dak. 57720

Filed Apr. 20, 1973, Ser. No. 352,881
Int. Cl. B60d *3/00*
U.S. Cl. 280—477 **10 Claims**



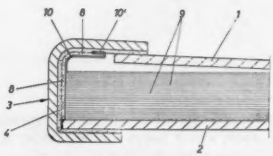
A trailer hitch includes a transverse yoke with adjustable means for attaching it to tow vehicle axles of various lengths and configurations; a swivelled hollow ring, offset from the vertical axis about which it swivels is fastened in the middle of the yoke; a tongue bearing a collapsible pair of arms carry at their front ends ball members having reduced neck section which engages the opening in the swivelled ring for firm pulling and pushing engagement. Toggle means are provided for spreading the arms apart and locking them in engagement in the ring, pivoted guiding gate means direct the arms, when collapsed together, into the ring opening. A lever and a sliding control bar attached thereto arranged to selectively spread or close the arms with respect to each other to latch or unlatch the neck portions of the arms in the ring member. The trailer tongue is pivoted for movement in a vertical plane, including compression springs to absorb road shocks and to cushion the trailer load as applied to the two vehicle axle by the tongue.

3,833,244

ADHESIVE BINDING COVER

Egon Heimann, Falkenberg 61, 56, Wuppertal-Elberfeld, Germany

Continuation of Ser. No. 97,412, Dec. 3, 1970, abandoned.
This application Apr. 2, 1973, Ser. No. 346,887
Int. Cl. B42d *1/04*
U.S. Cl. 281—21 R **3 Claims**



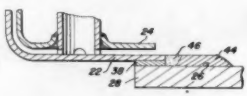
Adhesive binding folder for binding loose sheets with two outside enclosing covers, joined to each other by a back strip which carries a double self adhesive layer against which the narrow rear edges of the bound inner sheets are positioned. The layer includes a removable strip to expose the adhesive and thereby adhere to the sheets. An inner protective sheet for the purpose of attachment penetrates with a narrow margin into the contact interface of the self adhesive layer. Said sheet serves to cover the self-adhesive layer laid bare by pulling out individual sheets.

3,833,245

CYLINDRICAL BELLOWS

William R. Davis, Louisville, Ky., assignor to Chemetron Corporation, Chicago, Ill.

Filed Dec. 14, 1972, Ser. No. 315,046
Int. Cl. F16l *21/00*
U.S. Cl. 285—226 **9 Claims**



An end of a cylindrical bellows is mounted around and to a cylindrical surface by a method comprising the steps of depositing circumferential weldment on the surface in spaced relation to the end of the cylindrical bellows and depositing circumferential weldment on the surface as butt weldment therebetween.

3,833,246

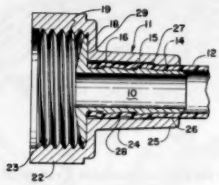
COUPLING FOR PLASTIC CONDUIT

Harold E. Wake, Lindsay, Calif., assignor to Apache Corporation, Minneapolis, Minn.

Filed Aug. 6, 1973, Ser. No. 385,858
Int. Cl. F16l *33/22*
U.S. Cl. 285—247 **8 Claims**

A coupling for flexible, relatively hard plastic conduit comprising a tubular nipple which is inserted into the conduit and a sleeve which surrounds the conduit, the coupling retaining

the conduit in position but permitting rotation of the outer sleeve with respect to the hose for securing the same to a mating coupling member. The nipple member is provided with annular ribs which except for an outer flange abutting the end of the conduit are the only portions of the nipple which are of a greater diameter than the interior diameter of the hose. The outer sleeve has an outer coupling portion designed to couple with a male coupling member, an intermediate section of larger internal diameter than the external diameter of the conduit, and an inner portion having an internal diameter substantially equal to but slightly greater than the external diameter of the conduit. When assembled on the conduit, the intermediate portion of the outer sleeve overlies the annular ribs of the nipple which push portions of the conduit outwardly into the intermediate portion of the outer sleeve. The outer coupling portion of the outer sleeve is preferably a female coupling member designed to be tightly coupled with a male coupling member, the end of which presses against the outer flange of the nipple members to press it into sealing engagement with the outer wall of the intermediate portion of the outer sleeve.



3,833,247

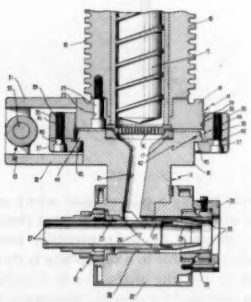
BREECH-LOCK MECHANISM FOR EXTRUSION APPARATUS

Louis Puskas, Glen Rock, N.J., assignor to John Royle & Sons, Patterson, N.J.

Filed Mar. 15, 1973, Ser. No. 341,389

Int. Cl. B29f *3/10*

U.S. Cl. 285—414 **5 Claims**



A rapidly-operated mechanism for selectively locking first and second bodies together in confronting relationship and releasing them for separation. The locking mechanism includes a multi-part annular member having coaxial first and second annular parts, the first such part having threaded connection with the first body so as to be selectively advanceable toward and retractable from the first body, the second annular part and the second body having transversely disposed sets of circumferentially spaced radially projecting lugs, the lugs of one set overlapping the lugs of the other set to pull and to hold the bodies together when the sets of lugs are turned in a first direction about their axes toward a first terminal angular position relative to each other, the lugs of the respective sets being free from axial interference with each other when the sets of lugs are turned in the opposite direction to a second terminal angular position. The mechanism includes means securing the said annular parts of the multi-part annular member for adjustment about their common axis relative to each other, whereby to compensate when necessary for the wearing of the parts of the mechanism.

3,833,248

SHOCK-ABSORBING BUMPER ARRANGEMENT

Felix Wossner, and German Schmitt, both of Schweinfurt am Main, Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Germany

Filed May 9, 1972, Ser. No. 251,813

Claims priority, application Germany, May 15, 1971, 2124275; May 15, 1971, 2124276

Int. Cl. B60r *19/06;* **F16f** *9/06*

U.S. Cl. 293—86 **7 Claims**

Telescoping shock absorbers are arranged between the frame and bumper bar of an automotive vehicle in such a manner that the piston of each shock absorber moves inward of the cylinder under the impact of a collision, and liquid flows through a restricted passage between the compartments of the cylinder cavity to reduce the velocity of cylinder movement. If the passage is a groove in the inner cylinder wall, its flow section decreases in the direction of inward piston movement in such a manner that the force opposing the piston movement remains substantially constant even though the velocity of cylinder movement decreases. The same result can be achieved by forming the restricted passage in the piston, and biasing a valve member on the piston toward the passage closing position by a heavily prestressed cup spring or helical spring.

3,833,249

INDOOR AND OUTDOOR DEBRIS PAN

Richard F. McKinney, II, P.O. Box 252, New Galilee, Pa. 16141

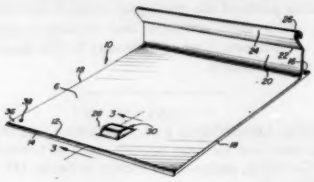
Filed Apr. 18, 1973, Ser. No. 352,476

Int. Cl. A47l *13/52*

U.S. Cl. 294—1 R **4 Claims**

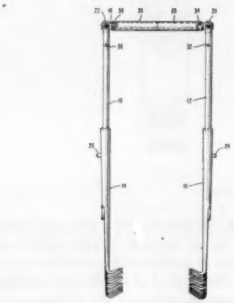
A dustpan-type debris gathering, carrying and trash bag or can loading implement for use indoors or outdoors comprising a flat-faced flexibly resilient sheet of moldable normally flat plastic material atop which debris, such as grass clippings, twigs, loose leaves and miscellaneous lawn trash, can be raked, swept or scooped up and safely and expeditiously emptied into a trash bag or can. The sheet is substantially rectangular in plan and has a bevelled leading edge for scooping up

and guiding litter atop the sheet and a barrier or limit stop wall across and forwardly of the trailing edge. The upper edge of the wall has an oblique angled flange provided with a rolled



thumb grasping bead. The forward leading edge portion is indented and fashioned into a finge accommodating well or receiver which, in turn, embodies an overhanging finger retaining ledge.

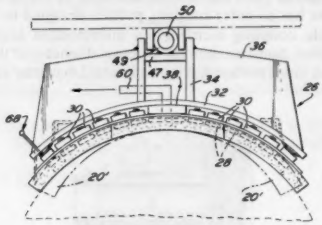
3,833,250
LAWN CLEANING TOOL
Elinor W. Lawrence, 8 Stanley Rd., Darien, Conn. 06820
Filed May 11, 1973, Ser. No. 359,253
Int. Cl. A01b *1/18;* **A01d** *7/10*
U.S. Cl. 294—50.6 **10 Claims**



First and second elongated handles are hingedly connected to the respective ends of a cross-handle. Opposed rake heads are attached to the unhinged ends of the first and second handles to provide an articulated tool which is particularly useful in gathering and picking up loose materials such as tree leaves.

3,833,251
LONGITUDINALLY STIFFENED FLEXIBLE LIFTER FOR ARCUATE OBJECTS
Jacob J. Creskoff, Wynnewood, Pa., assignor to Aerovac Corporation, Bala-Cynwyd, Pa.
Filed Oct. 6, 1972, Ser. No. 295,634
Int. Cl. B66c *1/02*
U.S. Cl. 294—64 R **7 Claims**

A vacuum lifter is provided for arcuately shaped objects which includes a flexible sheet having opposed parallel surfaces. A supporting member is connected to one surface of the sheet and a resilient sealing gasket is connected to the opposing surface of the sheet about the periphery thereof. A source of vacuum is provided and the sheet has a port through which the vacuum source communicates. Stiffening means are connected to the flexible sheet to prevent bending of the sheet about a line extending at an angle transverse to the longitudinal extent of the plate. The lifter is secured to an arcuate object by placing the gasket against the outer surface of the object so that a partial vacuum is formed in the compartment formed between the outer surface of the object, the sheet and



the gasket. The sheet accomodates a range of diameters of arcuate objects by bending around its longitudinal axis to conform to the diameter of the objects.

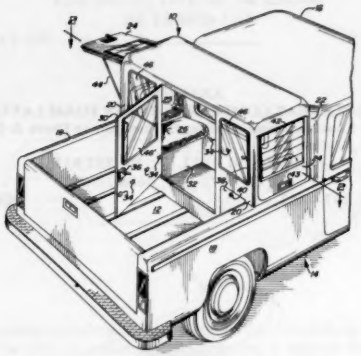
3,833,252
FISH RETRIEVER
Donald E. Redding, P.O. Box 122, Sweet Home, Oreg. 97401
Filed Mar. 29, 1973, Ser. No. 346,098
Int. Cl. A01k *97/14*
U.S. Cl. 294—110 A **1 Claim**

A fish retriever having a pair of jaws which engage a fish from both sides with tip portions of the jaws piercing the fish. The jaws are operated by links pivotally connected and operated by a slide movable in a supporting body portion. The slide is powered by a spring or the like to forcefully close the jaws. Means are provided for opening the jaws so that they can be moved down over the fish. A trigger holds the slide in a cocked position, and when the slide is released the jaws grasp the fish.

3,833,253
ONE-MAN TRUCK-MOUNTED CAMPER
Truman G. Butler, 30 S. Lesueur St., Mesa, Ariz. 85204
Filed Dec. 11, 1972, Ser. No. 314,008
Int. Cl. B60p *3/32*
U.S. Cl. 296—23 MC **5 Claims**

A short-bodied camper shell for mounting on the bed of a pickup truck includes hinged, louvered windows, an access

door, locked storage area accessible from the truck bed, and removable cushions having rods cooperating with hangers

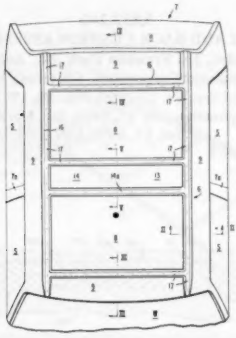


mounted to the interior of the camper to form either two seats, a cot, a storage platform, or a combination of a table and one seat.

3,833,254
MOTOR VEHICLE ROOF

Hermann Renner, Magstadt, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Germany

Filed Dec. 6, 1972, Ser. No. 312,513
Claims priority, application Germany, Dec. 7, 1971, 2160537
Int. Cl. B60j *91/00*
U.S. Cl. 296—137 R **36 Claims**

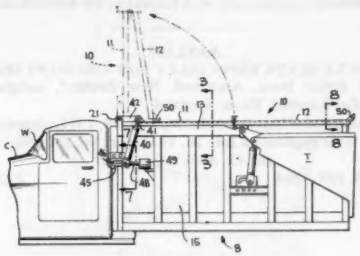


A motor vehicle roof with a covering panel provided with longitudinal and/or transverse beads or reinforcing seams and with a double-walled hollow roof frame formed partially by the edge of the roof covering panel; the roof frame forms a roof preferably extending peripherally along the rood edge while a web extends through the bearer which is connected with its edges.

3,833,255
COMBINED LOAD COVER AND WINDSHIELD PROTECTOR FOR DUMP TRUCK

George E. Logue, 321 Winters Ln., Montoursville, Pa. 17754

Filed Oct. 29, 1973, Ser. No. 410,522
Int. Cl. B60p *7/02*
U.S. Cl. 296—137 B **8 Claims**

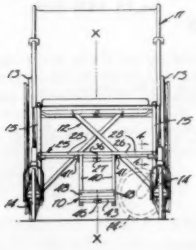


Two hinged cover plates are attached to a dump truck to provide a load cover. Power means is provided to lift the plates for loading, thus moving the plates through an upright semi-folded position, and then to a forward, full-folded horizontal position over the cab so as to cover the windshield and protect the same from rocks and other debris that might fall during loading. A spring is provided to give the plates spreading action in the intermediate vertical position and counterbalancing action in the cover position. The forward end of the first plate is pivotally mounted at the front of the body and the free end of the second plate is guided on the upper rail of the dump box during covering and uncovering. The power cylinder includes means for shifting the base to allow over-center action in both directions of movement of the covers. Tortuous path water seals are provided at the front of the box and at the middle hinge.

3,833,256
FOLDING FOOT REST AND BRACE FOR FOLDING WHEELCHAIRS

Charles E. Dehner, E. 1922 35th St., Spokane, Wash. 99203

Filed June 1, 1973, Ser. No. 366,194
Int. Cl. A47c *4/20, 7/52*
U.S. Cl. 297—44 **10 Claims**



A folding footrest for foldable wheelchairs comprises a crossbar mounted to longitudinal side frame members of a wheelchair. The crossbar is comprised of two laterally aligned sections hinged together along axes lying along a vertical folding plane extending longitudinally through the wheelchair. Two upright bars are hinged to each of the crossbar sections and depend therefrom on either side of the vertical plane.

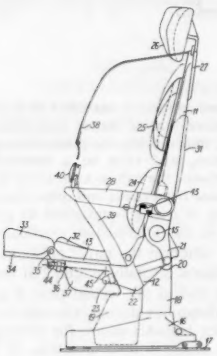
Footrest plates are pivotably mounted to and protrude forwardly from the upright bars. The plates are hinged together along a hinge axis also lying in the vertical plane. The hinged footrest assembly is foldable in response to folding of the wheelchair between an open supportive condition and a closed storage position. The footrest also includes longitudinal clamps mounting the footrest to the wheelchair which allow it to be moved longitudinally with respect to the wheelchair.

3,833,257

VEHICLE SEATS, ESPECIALLY FOR AIRCRAFT SEATS

Ernest Baker Dove, Auckland, New Zealand, assignor to Teleflex Limited, Essex, England

Continuation of Ser. No. 200,326, Nov. 19, 1971, abandoned.
This application July 26, 1973, Ser. No. 382,995
Int. Cl. A47c *1/02, 15/00*
U.S. Cl. 297—284 **2 Claims**



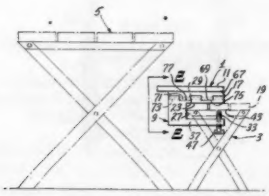
A vehicle seat comprising a central spine having a head rest and kidney pads attached thereto, projects upwardly from a pelvic support frame. A seat squab support tray is attached to said pelvic support frame and power means to adjust said central spine is provided.

3,833,258

PICNIC BENCH RISER

Paul Schneider, Trevett Rd., and Floyd Schneider, 21 Spring St., both of Springville, N.Y. 14141

Filed Sept. 20, 1972, Ser. No. 290,555
Int. Cl. A47c *1/16*
U.S. Cl. 297—252 **1 Claim**



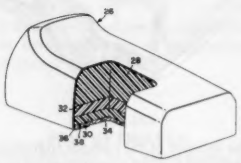
The foldable side panels of the picnic bench riser have an opening extending inwardly from the back edge for receiving a conventional picnic bench seat. The top wall of the opening in each panel is substantially parallel with the seat of the riser and supports the riser seat on a picnic bench seat a substantial distance above and forward of the picnic bench seat. Clamps carried by the side panels are adapted to engage the bottom surface of the picnic bench seat and to secure the bench riser in place.

3,833,259

VEHICLE SEAT COMPRISING THREE FOAM LAYERS

Roscoe Louis Pershing, Moline, Ill., assignor to Deere & Company, Moline, Ill.

Filed May 30, 1972, Ser. No. 257,937
Int. Cl. A47c *7/14*; B60n *1/06*
U.S. Cl. 297—452 **7 Claims**



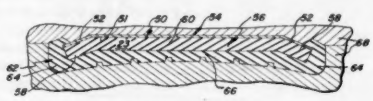
A vehicle seat comprises three layers of polymer foams, the upper and lower layers being polyurethane and the center layer being polyethylene. The thicknesses and deformation characteristics of the layers of foam are optimized for a given overall seat thickness range so as to interact with an injury model correlating the deformation characteristics of the human spine such that deformation and hence injury to the spine, occasioned by the impacting of the rider's upper torso upon the seat, will be minimized. A procedure of evaluating a seat in order that the deformation characteristics of the seat may be optimized is set forth.

3,833,260

SEAT AND BACK CUSHION ASSEMBLY

Arthur J. Harder, Jr., Franklin Park, Ill., assignor to Coach and Car Equipment Corporation, Elk Grove Village, Ill.

Continuation of Ser. No. 226,905, Feb. 16, 1972, abandoned.
This application July 27, 1973, Ser. No. 383,341
Int. Cl. A47c *7/02*
U.S. Cl. 297—452 **5 Claims**



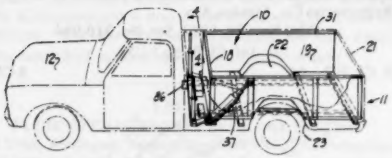
A seat comprising a seat cushion and a back cushion. The seat cushion includes a spring unit encased in a flexible, film-like cover and mounted on a bottom support member with foam covering the top and sides of the coil spring unit and underlapping the margins of the bottom support member. The back cushion comprises a less dense foam slab cemented to a rigid backing plate, with the face and edges of the backing plate and slab encased in a higher density foam.

3,833,261

DUMPING ACCESSORY FOR PICK-UP TRUCKS AND THE LIKE

Tony Howard Dingler, 13596 Boone Rd., Columbia Station, Ohio 44028

Filed Mar. 27, 1972, Ser. No. 238,306
Int. Cl. B60p 1/64
U.S. Cl. 298—1 A 2 Claims



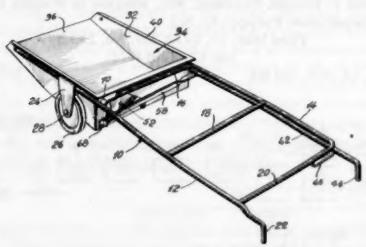
Portable apparatus for converting a flat-bed pick-up truck, and the like, to a dump truck including a support frame, a dump body or container detachably and rotatably hinged at the outer end to the frame, and a pair fo spaced hydraulic cylinders or lifters interconnecting the dump body and the frame at their nonhinged ends to raise the inner end of the body to dump its contents, together with improved hydraulic and electrical circuits for operating and controlling operation of the hydraulic cylinders and preventing damage to the accessory of the truck and improved means for holding the accessory in position within and on the truck body.

3,833,262

DUMPING SCRAPER-BARROW

Noel Tasse, 132, rue Gauthier, St-Jerome, Comte Terrebonne, Quebec, Canada

Filed Feb. 20, 1973, Ser. No. 334,145
Int. Cl. B62b 1/24
U.S. Cl. 298—2 6 Claims



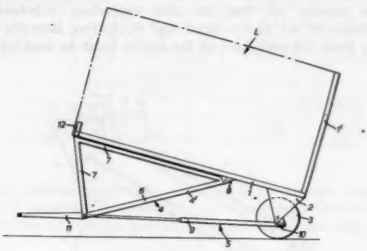
There is disclosed a dumping scraper-barrow in which raising of the scoop to dumping position is effected by pulling one of the handles towards the other thereby actuating a linkage connecting the handle to the back of the scoop. The users thereby are enabled to raise the scoop or even to adjust the angle during scraping by simply squeezing together with his arms without the necessity of letting go of one of the handles. The arrangement also gives the users plenty of leverage for raising the scoop when the same is loaded down with material to be dumped.

3,833,263

TIPPER VEHICLES

Michael Vivian Jackson, Hethersett, England, assignor to Farmhand (U.K.) Ltd., Norfolk, England

Filed June 1, 1972, Ser. No. 258,637
Claims priority, application Great Britain, June 4, 1971, 18949/71
Int. Cl. B60p 1/18
U.S. Cl. 298—5 7 Claims



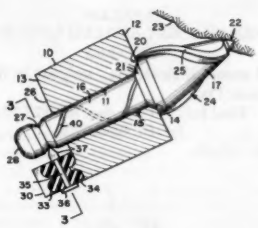
A tipper vehicle comprises a trailer body pivotally linked to a sub-frame in such a manner that as the trailer body is moved from its transport to its tipped position, the wheelbase of the vehicle contracts.

3,833,264

SELF-SHARPENING BIT AND MOUNTING THEREFOR

Gerald W. Elders, 10 Hillcrest St., Christopher, Ill. 62822

Continuation of Ser. No. 69,161, Sept. 2, 1970, abandoned, which is a continuation of Ser. No. 498,639, Oct. 20, 1965, abandoned. This application Nov. 6, 1972, Ser. No. 304,106
Int. Cl. E21c 35/18
U.S. Cl. 299—86 19 Claims



Conically shaped point attact mining bits are retained for rotation in sockets and are provided with a plurality of protuberences extending outwardly from the periphery of the conical head. The protuberences consist of fins, knobs or the like and are adapted to frictionally engage the material being mined and cause turning of the bit in the socket.

3,833,265

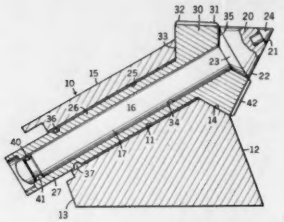
ROTATABLE SLEEVE FOR SELF-SHARPENING BIT

Gerald W. Elders, 10 Hillcrest St., Christopher, Ill. 62822

Continuation-in-part of Ser. No. 69,161, Sept. 2, 1970, abandoned, Continuation-in-part of Ser. No. 498,638, Oct. 20, 1965, abandoned. This application Nov. 6, 1972, Ser. No. 304,242
Int. Cl. E21c 35/18
U.S. Cl. 299—86 5 Claims

A bit and block assembly in which a sleeve is rotatively mounted in a block bore and in which a point-attack bit has its

elongate shank mounted in a sleeve bore and has a cutting tip on the leading end of the bit head that penetrates the material being mined with a picking action upon travel of the bit into and out of a mine face. A plurality of protuberances are provided on and extend outwardly from the periphery of the sleeve head, the protuberances providing frictional contact with the material being mined to effect positive turning of the sleeve, and hence of the bit in the sleeve, upon picking of the mine face by the bit head. In one embodiment, the protuberances consist of fins on and extending substantially lengthwise of the sleeve head and projecting laterally outwardly from the periphery of the sleeve head. In another em-



bodiment, the protuberances consist of individual knobs formed on and projecting laterally outwardly from the periphery of the sleeve head. The protuberances are circumferentially spaced about the periphery of the sleeve head to provide longitudinal passages therebetween extending from its leading end to its trailing end, the material being mined being movable through the passages and engageable with the protuberances to effect positive turning of the sleeve and bit and to effect removal of the material being mined from the sleeve head. The sleeve head with its protuberances extends laterally outwardly beyond the outer block face to enable discharge of the material being mined from the passages between the circumferentially spaced protuberances.

3,833,266

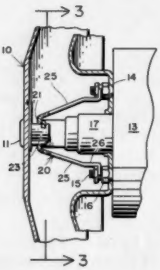
COMBINED BRACKET AND LUG NUTS FOR WHEEL COVERS

Robert E. Lamme, Hialeah, Fla., assignor to High Hill, Inc., North Miami, Fla.

Filed July 9, 1973, Ser. No. 377,774

Int. Cl. B60b *7/00*

U.S. Cl. 301—37 AT **3 Claims**



A combined bracket and lug nuts for automobile wheel covers having a hub portion with a centrally disposed opening for receiving the barrel of a lock and a plurality of flexible leg portions extending in one direction thereof at an oblique angle with tab portions extending from the free end of the leg portions in a plane parallel to the hub portion. The tab portions are provided with open ended slots that are seated in peripheral slots formed in lug nuts by flexing the flexible leg portions beyond the position of the lug nuts and releasing the leg portions to permit the tabs to be received by the peripheral slots in the lug nuts.

3,833,267

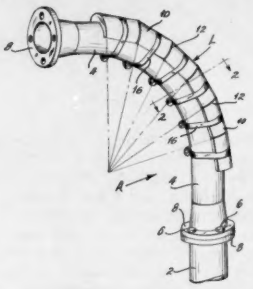
LINER AND PROCESS FOR COMBATING WEAR IN PNEUMATIC TRANSPORT SYSTEMS

Ralph David McCumber, Mexico, Mo., assignor to A. P. Green Refractories Co., Mexico, Mo.

Filed Nov. 30, 1972, Ser. No. 310,994

Int. Cl. B65q *53/52*

U.S. Cl. 302—64 **8 Claims**



An elbow in a pneumatic transport system is lined on the outside to combat wear from abrasive substances conveyed by the system. The lining comprises a plurality of liner segments extended only across the backside of the elbow's exterior surface and set end to end along the elbow in the directon of flow through it. The liner segments are attached to the elbow by an adhesive and by steel bands. The opposing end faces of adjacent liner segments are generally parallel and a layer of adhesive exists between them. The liner segments are preformed from a durable material such as aluminum oxide.

3,833,268

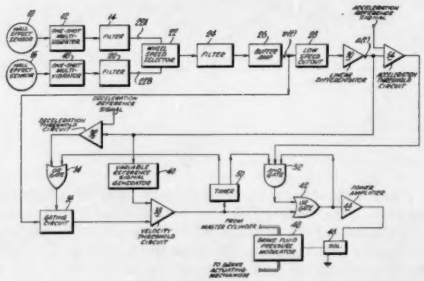
WHEEL SLIP CONTROL SYSTEM FOR AUTOMOTIVE VEHICLES AND THE LIKE

Joseph E. Fleagle, Overland, Mo., assignor to Wagner Electric Corporation, Parsippany, N.J.

Filed Mar. 10, 1972, Ser. No. 233,579

Int. Cl. B60t *8/12*

U.S. Cl. 303—21 BE **19 Claims**



A control system for varying the pressure applied to fluid-controlled brake actuating mechanisms upon detection of both a wheel deceleration in excess of a predetermined

threshold and a subsequent incremental decrease in wheel velocity greater than a continuously-varying reference increment Δv of wheel speed. This reference increment Δv is inversely related to a variable reference signal which is directly related to the rate of change of wheel speed. Thus, the continuously-varying reference increment of wheel speed Δv is inversely related to the rate of change of wheel speed. Consequently, the period of time between occurrence of a wheel deceleration in excess of said predetermined threshold and the relief of brake line fluid pressure is shorter when wheel speed decreases rapidly and longer when wheel speed decreases slowly. Compensation is thus made for varying road and load conditions, and for the characteristics of the braking mechanism which applies braking force to the wheel.

3,833,269

FLUID OPERATED SAFETY BRAKE SYSTEM

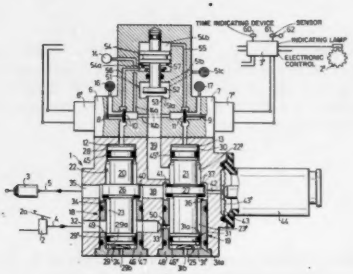
Josef Trui, Bissingen; Klaus-Otto Riesenberg, Ludwingsburg, and Inge Schwerin, Moglingen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Dec. 21, 1972, Ser. No. 317,359

Claims priority, application Germany, Dec. 23, 1971, 2164094; Aug. 31, 1972, 2242745

Int. Cl. B60t *8/02*

U.S. Cl. 303—21 F **9 Claims**



A fluid operated brake system is controlled by two main valves operated by two electromagnetic valves, which are controlled by an electronic control device responding to signals of a sensor which senses a locked condition of the brake, requiring relieving of the pressure of the brake actuating means through a discharge conduit opened by one of the main valves. If the discharge conduit is opened due to a malfunction when braking is required, the wheel is not braked at all. A safety control valve is provided which is operated by pressure fluid under the control of one of the electromagnetic valves, to close the discharge conduit when not closed by the respective main valve due to malfunction of the respective electromagnetic valve, so that a braking force is assured.

3,833,270

VEHICLE WHEEL FLUID BRAKE ANTI-LOCK SYSTEM

Werner Gotz, Friolzheim, and Bernd Przybyla, Markgroningen, both of Germany, assignors to Robert Bosch GmbH, Gerlingen-Schillerhohe, Germany

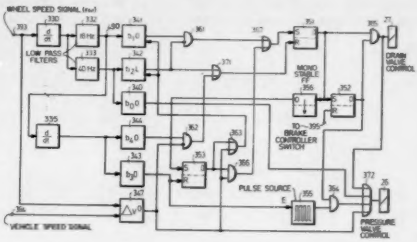
Filed Jan. 30, 1973, Ser. No. 328,047

Claims priority, application Germany, Feb. 12, 1972, 2206807

Int. Cl. B60t *8/12*

U.S. Cl. 303—21 BE **40 Claims**

Brake fluid inlet and outlet valves to supply or drain pressurized brake fluid to or from a vehicle wheel are controlled by a plurality of acceleration sensors which receive acceleration signals derived by a differentiator from vehicle wheel speed signals. The vehicle wheel acceleration signal is additionally differentiated to obtain a rate of acceleration change signal, and two of the threshold switches are responsive to the



further differentiated rate of acceleration change signal to provide for better matching of response of the system to road conditions, or changes in road conditions during braking.

3,833,271

VEHICLE BRAKING SYSTEMS

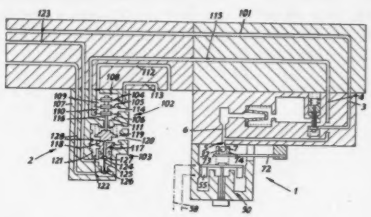
Maurice Parfitt, and Keith William Langley, both of London, England, assignors to Westinghouse Brake and Signal Company, London, England

Filed June 13, 1973, Ser. No. 369,519

Claims priority, application Great Britain, July 4, 1972, 32179/72

Int. Cl. B60t *8/04*

U.S. Cl. 303—21 A **7 Claims**



A vehicle braking system is proposed in which the fluid pressure for braking is derived from a controlled magnet valve arrangement and in this advantageous system the supply of fluid pressure to the magnet valve arrangement is provided by a variable load valve which is arranged by being provided with a pressure responsive member which is extra to the pressure responsive member for making the output thereof vehicle load responsive. The extra pressure responsive member is thus supplied with pressure from an E.P. converter responsive to an electrical vehicle speed signal so as to oppose vehicle load pressure signals and thus make the supply of fluid pressure to the magnet valve arrangement speed and load dependent down to a given value of the electrical speed signal.

3,833,272

PEDAL-OPERATED HYDRAULIC CONTROL VALVE ASSEMBLY

Glyn Phillip Reginald Farr, Warwickshire, England, assignor to Girling Limited, Tyseley, Birmingham, England

Filed Sept. 22, 1972, Ser. No. 291,169

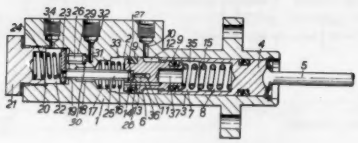
Claims priority, application Great Britain, Sept. 24, 1971, 44621/71

Int. Cl. B60t *15/06*

U.S. Cl. 303—52 **4 Claims**

In a control valve assembly for an hydraulic braking system a brake housing has first, second, and third ports adapted to be

respectively connected to a source of hydraulic fluid under pressure, to a brake actuator, and to a reservoir, a pedal-operated piston working in a bore in the housing acts through a spring on a second piston through which there is a passage providing communication between the second and third ports,



and said passage is controlled by a normally open exhaust valve member which, on axial movement of the second piston closes and acts through a resilient connection to open a normally closed inlet valve member controlling communication between the first and second ports.

3,833,273

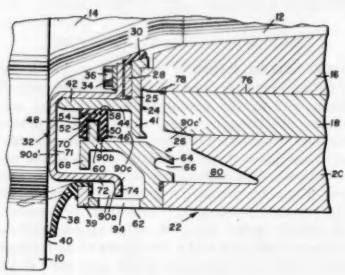
LABYRINTH TYPE SEAL

Samuel S. Rickley, West Boylston, and Harry Boghosian, Worcester, both of Mass., assignors to Morgan Construction Company, Worcester, Mass.

Filed July 30, 1973, Ser. No. 384,045

Int. Cl. F16c *33/80;* **F16j** *15/44*

U.S. Cl. 308—36.1 **7 Claims**



In a rolling mill, an interlocking labyrinth-type seal for a roll neck which is rotatably supported in a chock assembly. The seal includes an inner first sealing element which rotates with the roll neck, an outer second sealing element which is fixed in relation to the chock assembly, and a third sealing element which is carried on and movable axially along one or the other of the aforesaid first or second sealing elements. The sealing elements have axially and/or radially spaced flanges and surfaces which cooperate to define an interlocking sealing labyrinth for preventing the escape of lubricating oil from the bearing, while at the same time preventing the bearing and lubricating oil from becoming contaiminated with rolling lubricant cooling water, mill scale, dirt, etc.

3,833,274

DAMPING BEARING

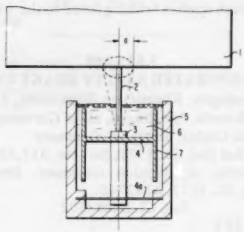
Johann Lorenz, Deutenhofen, and Eberhardt Willeitner, Munich, both of Germany, assignors to Maschinenfabrik Augsburg-1 Nurnberg Aktiengesellschaft

Filed May 8, 1972, Ser. No. 251,268

Claims priority, application Germany, May 8, 1971, 2122813

Int. Cl. F16c *27/00*

U.S. Cl. 308—143 **12 Claims**



A damping bearing for constraining a journal projecting from a rapidly spinning rotor, especially from a centrifuge barrel, in which the annular space between the damping cylinder and bearing housing is subdivided into individual, axially extending chambers.

3,833,275

FOOTSTEP BEARING

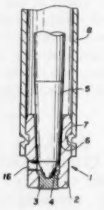
Gunther Wendel, Stuttgart, Germany, assignor to SKF Kugellagerfabriken GmbH, Schweinfurt, Germany

Filed Mar. 19, 1973, Ser. No. 342,880

Claims priority, application Germany, Mar. 24, 1972, 7211322[U]

Int. Cl. F16c *35/08*

U.S. Cl. 308—156 **5 Claims**



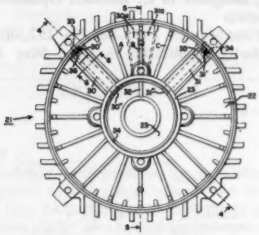
A footstep bearing for journalling the spindle shaft of a spinning and twisting machine comprising a tubular bearing bushing adapted to radially guide the spindle shaft and a bearing block located in the frontal end of the bushing. The block is provided with a step on which a spindle shaft fits and is adapted to absorb the axial thrust of the spindle shaft. The bearing block and the tubular bushing are joined together in a compressive interlocking arrangement such as by swaging, compressing, etc., one of the members.

3,833,276

LUBRICATING MEANS FOR A DYNAMOELECTRIC MACHINE END SHIELD HOUSING

Frederick William Baumann, Scotia, and Albert Rayner, Albany, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 12, 1973, Ser. No. 350,602
Int. Cl. H02k *5/16*; F16c *33/78*
U.S. Cl. 308—187 9 Claims



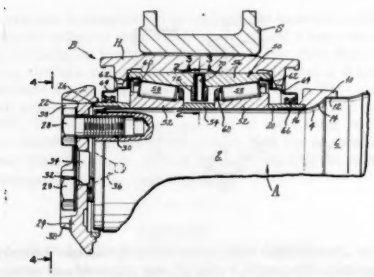
A dynamoelectric machine end shield housing is provided with a pair of lubricant receiving passageways integrally cast into the housing and extending from spaced-apart points on the periphery thereof to an inner lubricant well surface adjacent a bearing mounted in the housing. A lubricant baffle is mounted on the inner lubricant well surface to restrict flow of lubricant in a path parallel to the shaft bearing mounted in the end shield. The outer ends of said passageways are readily accessible from a single side of the machine and means are provided in combination with the above-mentioned baffle that enables the lubricating system to be quickly adapted for reversal of grease fitting and grease drain.

3,833,277

BEARING ASSEMBLY WITH VENT MEANS IN THE BEARING THEREOF

Harry M. Jones, Canton; Dale T. Grinstead, North Canton, and Jack O. Fickes, Dover, all of Ohio, assignors to The Timken Company, Canton, Ohio

Filed Jan. 12, 1973, Ser. No. 323,057
Int. Cl. F16c *35/04*
U.S. Cl. 308—180 16 Claims



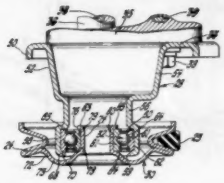
A double row tapered roller bearing has a double cup provided with a vent fitting between the raceways thereof, and a portion of this vent projects inwardly beyond the inner surface of the cup to prevent grease from entering the vent fitting if the bearing cup turns such that the vent fitting is at the bottom thereof. Thus, the bearing is vented between the two raceways thereof and this minimizes the chances of the vent passageway becoming obstructed with hardened grease. The bearing is held on an axle journal by an end cap having a triangular rib, and the size of the bearing is embossed on each leg of the rib so that the size is clearly legible irrespective of the angular position of the end cap.

3,833,278

ANTI-FRICTION BEARING IDLER ASSEMBLY

Raymond J. Green, Northville, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 21, 1973, Ser. No. 361,976
Int. Cl. F16c *33/00*
U.S. Cl. 308—190 2 Claims



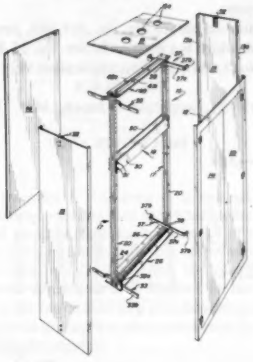
An idler assembly having a bracket, an idler and an anti-friction bearing with an outer race secured in a tubular portion of the bracket and an inner race secured on a central tubular portion of the idler.

3,833,279

MODULAR SUPPORTING ASSEMBLY

Joseph H. MacKenzie, Jr., 431 Prairie Ave., Wilmette, Ill. 60091

Filed Mar. 2, 1973, Ser. No. 337,410
Int. Cl. A47b *47/00*, *57/08*; F16b *12/00*
U.S. Cl. 312—257 SK 3 Claims



A modular supporting assembly is provided which is formed from a plurality of complemental extruded components. A first set of components are arranged relative to one another so as to form a pair of spaced substantially parallel upright columns. A second set of components are arranged relative to one another so as to form elongated supports disposed transversely of the columns. The supports are removably secured to the columns by suitable connecting means. The height of the columns may be varied by securing the components of a set in abutting end to end relation.

3,833,280

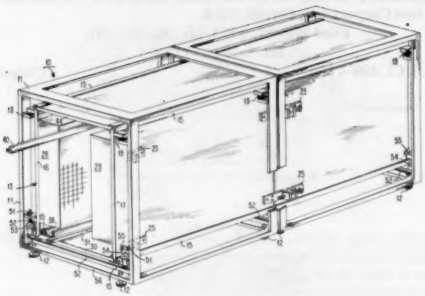
AUTOMATIC STORAGE APPARATUS

Arthur H. Bell, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 13, 1972, Ser. No. 306,136

Int. Cl. A47b *88/00, 95/00*

U.S. Cl. 312—319 9 Claims



Automatic storage apparatus particularly adapted for storage retrieval of information-bearing documents is described. The apparatus is particularly adapted to enable precision high-speed storage and retrieval operations in extensible storage systems. An outer frame securely supports an extremely rigid inner frame via shock mounts and an equalizing apparatus. The equalizing apparatus permits slight movements of the inner frame for facilitating precise colinear interconnections of a plurality of modular cabinets comprising the storage apparatus. A traveling elevator is precisely mounted on the inner frame for movements through a plurality of the connectable cabinets. Several embodiments are shown.

3,833,281

HOLOGRAPHIC MEMORY WITH FERROELECTRIC-FERROELASTIC PAGE COMPOSER

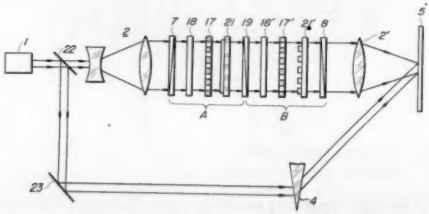
Akio Kumada, Kodaira, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 264,468, June 20, 1972, abandoned, which is a division of Ser. No. 15,134, Feb. 27, 1970, Pat. No. 3,684,351. This application May 29, 1973, Ser. No. 364,428

Claims priority, application Japan, Mar. 10, 1969, 44-18168

Int. Cl. G02b *27/00*

U.S. Cl. 350—3.5 3 Claims



A laser holographic memory write-in device comprising a pair of lenses, a pair of polarizers, and a quarter wave plate ($[2n + 1]/4$ wave plate) and optical shutter crystal both disposed between said pair of polarizers. This optical shutter crystal is made of a ferroelectric-ferroelastic crystal having z-cut end faces the distance between which is arranged to be $[(2n + 1)/4]\lambda$, one z-plane being provided with a plurality of mutually parallel transparent electrodes, the other z-plane being provided with a uniform transparent electrode, so as to apply an electric field at least equal to the coercive electric field of the crystal.

3,833,282

MICROSCOPE TRANSMITTING LIGHT ILLUMINATION SYSTEM USING THE KOHLER SYSTEM

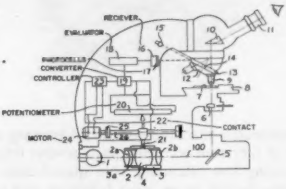
Gerhard Kappl, Vienna, and Alois F. Dehlink, Vosendorf, both of Austria, assignors to C. Reichert Optische Werke AG, Vienna, Austria

Filed May 15, 1972, Ser. No. 252,989

Claims priority, application Austria, May 13, 1971, A 4142/71

Int. Cl. G02b *21/08*

U.S. Cl. 350—87 1 Claim



A Kohler illumination system for a microscope having a lens of variable focal length so as to vary the illumination to suit the field of view of any objective. The adjustment of the variable lens is initiated in response to a reference signal from the microscope nosepiece or from the particular objective which is in operative position.

3,833,283

ILLUMINATION EQUIPMENT FOR MICROSCOPES

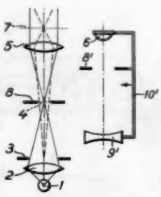
Hans-Werner Stankewitz, Steindorf, Germany, assignor to Ernst Leitz, GmbH, Wetzlar, Germany

Division of Ser. No. 239,671, March 30, 1972, Pat. No. 3,799,645. This application Jan. 28, 1974, Ser. No. 437,143

Claims priority, application Germany, Apr. 5, 1971, 2116625

Int. Cl. G02b *21/08*

U.S. Cl. 350—87 2 Claims

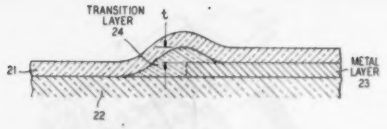


In an illumination equipment for microscopes comprising among other elements a lamp, a lamp aperture and an auxiliary condenser lens which may be interpositioned into the light path in addition to a stationary main condenser for varying the aperture of the equipment the improvement comprises a lens element which is inserted into and/or withdrawn from the light path upon interpositioning the auxiliary condenser lens. It is thereby achieved that the position of the image of both the lamp and the lamp aperture remains stationary when the aperture of the equipment is varied, thus eliminating the necessity for refocusing the image of the lamp aperture into the object plane and the image of the lamp into infinity.

3,833,284
COUPLING ARRANGEMENTS FOR DIELECTRIC AND METAL-CLAD OPTICAL WAVEGUIDES

Ivan Paul Kaminow, New Shrewsbury, and Heinz Paul Weber, Middletown, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 27, 1973, Ser. No. 391,640
Int. Cl. G02b *5/14*
U.S. Cl. 350—96 WG **5 Claims**

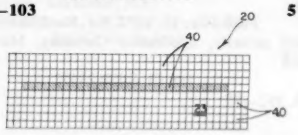


There are disclosed arrangements for optically coupling dielectric waveguides to waveguides bounded on one or more sides by a metal layer or cladding. Excessive losses at the junctions between these guides are avoided according to the invention by disposing a tapered transition layer between the dielectric light-guiding layer and the edge of the metal layer. The tapered transition layer has an index of refraction that is less than that of the dielectric layer and a thickness such that little of the evanescent field of the light propagating in the dielectric layer extends to the leading edge of the metal layer. With tapers in the transition layer that are sufficiently gradual, transitions between the guides can be made essentially lossless.

3,833,285
RETRODIRECTIVE REFLECTOR VISIBLE OVER WIDE RANGE OF OBSERVATION ANGLES

Sidney A. Heenan, Park Ridge, Ill., assignor to Amerace Esna Corporation, New York, N.Y.

Filed May 22, 1973, Ser. No. 362,653
Int. Cl. G02b *5/12*
U.S. Cl. 350—103 **5 Claims**



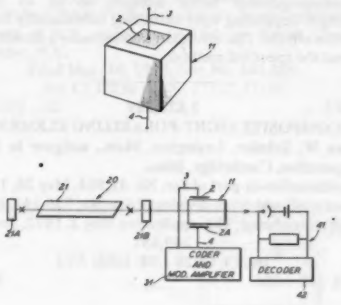
The reflector is constructed of transparent material and has a plurality of reflector elements at the rear and a light-receiving face at the front. Each reflector element has three faces intersecting at three edges, three dihedral angles being respectively defined by the intersection of adjacent faces. Two of the dihedral angles of all of the reflector elements are substantially 90°. The third dihedral angle of at least some of the reflector elements is substantially greater than the angle of the other two dihedral angles, so that light reflected by the reflector is diverged into an elongated pattern.

3,833,286
NON-LINEAR OPTICAL COMPONENT

Ulrich Deserno, Munich, and Siegfried Haussuehl, Cologne, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Continuation-in-part of Ser. No. 234,968, March 15, 1972, abandoned. This application Feb. 14, 1973, Ser. No. 332,313
Claims priority, application Germany, Mar. 26, 1971, 2114832
Int. Cl. G02f *1/40*
U.S. Cl. 350—160 R **5 Claims**

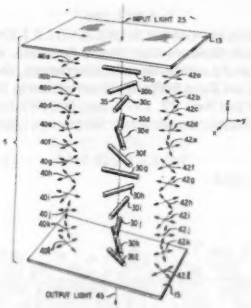
A non-linear optical component for use in laser systems providing frequency conversion, detection and modulation of electromagnetic radiation. The component is a monocrystal of strontium formate dihydrate [$Sr(CO_2H)_2 \cdot 2H_2O$] and includes a pair of electrodes mounted on opposite surfaces of the component.



3,833,287
GUEST-HOST LIQUID CRYSTAL DEVICE

Gary Newton Taylor, Fanwood, and Donald Lawrence White, Bernardsville, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 8, 1973, Ser. No. 339,368
Int. Cl. G02f *1/36*
U.S. Cl. 350—160 LC **5 Claims**



A pleochroic material is dissolved in a helically ordered liquid crystal mixture to form a thin film which selectively absorbs unpolarized incident light. In the absence of an electric field through the film, virtually all of the unpolarized light is absorbed by the film, even without the use of an auxiliary polarizer. When an electric field is applied to the film, the molecules thereof are reoriented to a nonabsorbing state. This electrically controlled absorption phenomenon is the basis for an advantageous display device

3,833,288
MEANS FOR PRODUCING A CONTROLLABLE SCATTERING OF LIGHT

Bjorn Olle Nilsson, Dr. Forselius gata 50, 413 26 Goteborg, Sweden

Filed Nov. 24, 1972, Ser. No. 309,029
Int. Cl. G02b *5/02*
U.S. Cl. 350—188 **10 Claims**

The invention concerns a method for producing a controllable scattering of light in optic and photographic equipment,

without causing any appreciable image distortion wherein a great number of small optic inhomogenities are inserted into the path of light flux. The dimensions and refractive index of said inhomogenities being selected so as to cause a wavelength-depending light scattering substantially free from refraction effects. The invention also includes a device for carrying out the specified method.

3,833,289

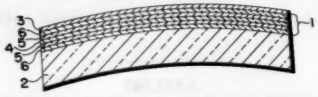
COMPOSITE LIGHT-POLARIZING ELEMENT

Norman W. Schuler, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 41,504, May 28, 1970, abandoned, which is a division of Ser. No. 726,141, May 2, 1968, abandoned. This application May 2, 1972, Ser. No. 249,651

Int. Cl. G02b *1/08;* **G02c** *7/12*

U.S. Cl. 350—155 **9 Claims**



A composite light-polarizing lens comprising a light-polarizing element having coated on each surface thereof a layer which enhances adhesion between in situ formed lens components and inhibits migration of lens constituents between said light-polarizing elements and said in situ polymerized components during formation of said lens.

3,833,290

HIGH POWER WIDE-ANGLE LENS

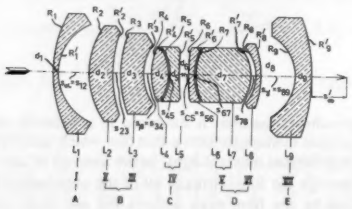
Erhard Glatzel, Heidenheim; Heinz Zajadatz, Aalen, both of Germany, and Ludwig Bertele, Heerbrugg, Switzerland, assignors to Carl Zeiss Stiftung, Wurttemburg, Germany

Filed Nov. 27, 1972, Ser. No. 309,645

Claims priority, application Germany, Nov. 25, 1971, 2158351

Int. Cl. G02b *9/64*

U.S. Cl. 350—214 **10 Claims**



A wide-angle lens of high power, having at least five component groups, separated from each other mainly by air. The groups include two condensing members, preferably separated from each other by a central vertex distance in which there may be a diaphragm. In front of the front condensing member, there are at least two negative meniscus elements, and behind the rear condensing member at least one diverging element. Constructional rules are stated, for various refractive powers, air spaces, and other characteristics, compliance with such rules resulting in an improved lens producing a superior image as compared with prior art lenses of the same general type.

3,833,291

CAMERA LENS ATTACHMENTS

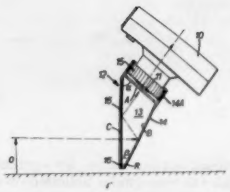
David Wylie Samuelson, London, England, assignor to Samuelson Film Service Limited, London, England

Filed Apr. 5, 1973, Ser. No. 348,051

Claims priority, application Great Britain, Apr. 6, 1972, 15970/72

Int. Cl. G03b *17/17*

U.S. Cl. 95—11 R **1 Claim**



An attachment is provided for the taking lens of the camera for deviating the optical axis of light entering the lens from an object being photographed. The attachment comprises a Bauernfeind prism, or other deviating prism of a kind providing an even number of successive reflections of the transmitted light beam between incidence and emergence. The prism is supported by a mounting by which it is detachably mounted on the lens holder of the camera with the emergence face of the prism directly in front of the lens and perpendicular to the optical axis of the lens.

3,833,292

MOTION PICTURE CAMERA COMPRISING AN EXTERNALLY ATTACHED DETACHABLE CASSETTE

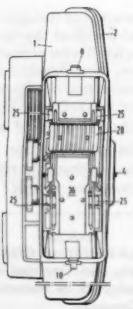
Otto Blaschek, 81 Dornach Anwanderweg 6, 8 Munich, Germany

Filed Mar. 21, 1972, Ser. No. 236,610

Claims priority, application Germany, Mar. 25, 1971, 2114485

Int. Cl. G03b *23/02*

U.S. Cl. 352—77 **3 Claims**



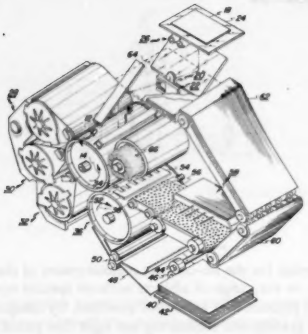
A film guide is provided on the camera body. Film path means are provided on the cassette. A rigid film channel is defined outside the film gate region between the camera body and the cassette.

3,833,293

METHOD OF CREATING COLOR TRANSPARENCIES

John P. Serio, Webster, and Francis J. Wieloch, Penfield, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed July 20, 1973, Ser. No. 381,107
Int. Cl. G03f 1/00
U.S. Cl. 355—17 10 Claims



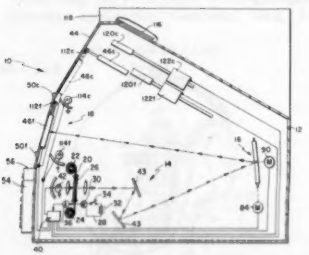
A method in which an electrophotographic printing machine creates a multi-color copy of an original document on a support sheet. The multi-color image is transferred from the support sheet to a transparent sheet forming a color transparency.

3,833,294

AUTOMATIC SEARCHING FILM READER

Lawrence P. Kessler, Penfield, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 2, 1972, Ser. No. 303,292
Int. Cl. G03b 23/08
U.S. Cl. 353—27 7 Claims



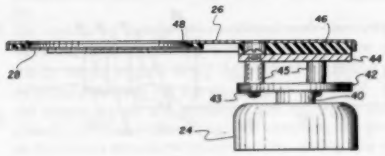
An apparatus for rapidly recording and storing a series of images from a transient source of information. A series of erasable image storage devices are provided upon which a plurality of desired pieces of information from the transient source can be rapidly recorded and stored. The transient source of information is scanned and the images of the desired pieces of information as detected are relayed via an automatically controlled multi-positional mirror to the initial available storage device for recording for subsequent viewing and optional printing without interrupting the action of the transient information source.

3,833,295

ENERGY ABSORBING MOUNTING FOR OPTICAL MODULATION ASSEMBLIES

William Hobart Bebb, Penfield, and Gary Boyd Gustafson, Hilton, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 16, 1973, Ser. No. 341,809
Int. Cl. G03b 11/00, 17/12, 27/76
U.S. Cl. 355—32 4 Claims



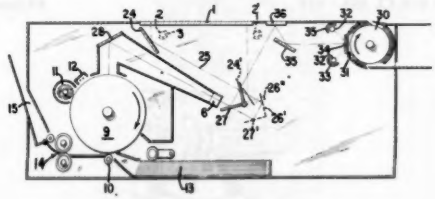
In photographic apparatus having an optical axis, optical modulation assemblies such as shutter and filter assemblies which are selectively moved into and out of the optical axis are shock mounted to reduce stresses in the optical modulation material. In a preferred embodiment, a photographic color printer is provided with subtractive color filters actuated by rotary solenoids. The rotary solenoid has a rotatable mounting plate and a filter carrier is mounted on the mounting plate by means of a shock absorbing layer of dead soft rubber compound. Preferably the filter is also mounted on the filter carrier by means of the same shock absorbing material.

3,833,296

OPTICAL SCANNING SYSTEM FOR PHOTOCOPYING

Mathias J. J. M. Vola, Venlo, and Willem P. H. A. Janssen, Blerick, both of Netherlands, assignors to Oce-van der Grinten N.V., Venlo, Netherlands

Filed Nov. 8, 1972, Ser. No. 296,800
Int. Cl. G03b 27/50
U.S. Cl. 355—51 7 Claims



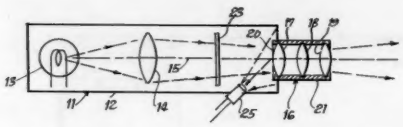
An electrophotographic copying apparatus having a movable mirror system for stripwise scanning an original laid on a support and directing the resulting light image stripwise via a stationary objective to a moving light sensitive medium is provided with a stationary slit located to a side of said support for exposure of a sheet-shaped original moved over the slit and with means including at least one mirror of the movable mirror system for stripwise projecting the light image from an original at the slit via said objective to the imaging medium. A single objective and imaging system thus serve for copying either sheet-shaped originals passed over the exposure slit or originals of various forms, including books, laid on said support.

3,833,297

AUTOMATIC BRIGHTNESS CONTROL FOR PHOTOGRAPHIC PROJECTORS

James R. Swartz, Lombard, Ill., assignor to Sears, Roebuck and Co., Chicago, Ill.

Filed Mar. 13, 1972, Ser. No. 234,281
Int. Cl. G03b 21/20
U.S. Cl. 353—85 7 Claims



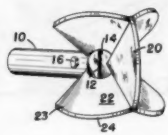
A photographic projector having means for automatically controlling the amount of illumination generated by a projection lamp in accordance with the intensity of the light image of a transparency projected onto a projection lens. The projector in addition to the projection lamp and the projection lens, includes light intensity sensing means and potential control means connected to the light intensity sensing means and the projection lamp for controlling the potential applied to the projection lamp. The light intensity sensing means preferably is a photo-conductive cell, such as a Cadmium-Selenium cell. A solid state circuit is provided for incorporation into the projector as the potential control means.

3,833,298

MECHANICAL MASKING APPARATUS FOR PRODUCING A PATTERN ON A CURVED SURFACE

Joseph L. Abita, Columbia, and Carlton F. Noyes, Silver Spring, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 9, 1973, Ser. No. 349,160
Int. Cl. G03b 27/28
U.S. Cl. 355—125 5 Claims



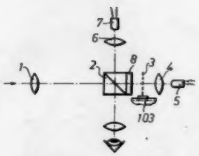
The invention relates to apparatus for masking selected portions of a curved surface to allow unit processing operations to be performed on the portions of the curved surface which are left exposed. In particular, the invention is a mechanical mask comprised of leaf-like projections having arcuate borders on the edges thereof. The arcuate borders are brought into engagement with a curved surface which is to have a processing operation performed thereon, thereby to mask that portion of the curved surface which is contacted by the arcuate borders of the leaf-like projections.

3,833,299

APPARATUS FOR NO-CONTACT MEASUREMENT OF THE VELOCITY, THE PATH OR THE RANGE OF OBJECTS

Karl Lang, Atzbach, Germany, assignor to Ernst Leitz GmbH, Wetzlar, Germany

Filed Dec. 12, 1972, Ser. No. 314,395
Claims priority, application Germany, Dec. 20, 1971, 2163200
Int. Cl. G01p 3/36
U.S. Cl. 356—28 11 Claims



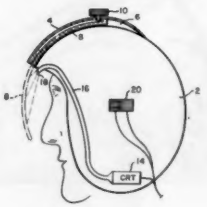
In a device for the no-contact measurement of the velocity, the path, or the range of objects without special optical markers with respect to a reference position, by imaging the object on a grating and measuring the light flux penetrating this grating by means of photoelectric elements, the output signals of which exhibit a frequency component proportional to the velocity of motion, the improvement comprising the support of the grating (3, (3, , 3'', 3''', 14, 44) being transparent, whereas the grating lines are made to be reflective; and photoelectric receivers (5 7; 27–30) are connected after the grating so that their output signals produced from the coaction of the image of the object with the grating are pairwise in phase opposition to one another.

3,833,300

THREE "D" WEAPONS SIGHT

William H. Rymes, Arlington, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 14, 1973, Ser. No. 360,282
Int. Cl. G02b 27/22
U.S. Cl. 356—13 9 Claims



An improved sighting device for projectile launchers that are mounted on a moving vehicle includes a dual parabolic visor slidably positioned on a helmet. The visor is in the form of two parabolas; and when locked in position, one parabola is in front of each eye of the wearer. The focal point of each parabola is at a prescribed point on the upper leading edge of the helmet opening. Fiber optic bundles, located at each focal point are connected to cathode-ray tubes and project a series of dots on to the visor in front of each eye of the wearer to simulate, in three dimensions, the trajectory of a projectile, if the projectile were fired at any given time.

3,833,301

TESTING OF SPHERICAL SURFACES BY HOLOGRAPHIC INTERFERENCE

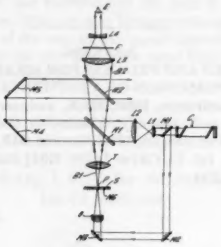
William Thomas Moore, London, England, assignor to The Rank Organisation Limited, London, England

Filed May 10, 1973, Ser. No. 358,969

Claims priority, application Great Britain, May 10, 1972, 21852/72

Int. Cl. G01b *9/02*; **G02b** *27/00*

U.S. Cl. 356—109 **7 Claims**



In place of earlier known sphericity testing techniques using accurate reference surfaces which are compared with a surface under test, this invention provides an absolute test of sphericity by making use, in effect, of the spherical wavefronts emanting from or converging to a point. A hologram plate is illuminated with coherent light from a laser to establish a first beam which forms a virtual image at the same point as that at which a beam illuminating the surface under test is focused, the illuminating beam being reflected at the surface and forming with the first beam observable interference fringes indicative of departures of the surface under test from true sphericity.

3,833,302

METHOD AND APPARATUS FOR THE AUTOMATIC PHOTOELECTRIC TRAPPING OF LOCAL CHANGES OF OPTICALLY EFFECTIVE OBJECT STRUCTURES

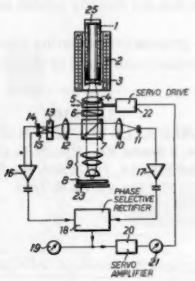
Fromund Hock, Wetzlar, Germany, assignor to Ernst Leitz GmbH, Wetzlar, Germany

Filed Aug. 20, 1973, Ser. No. 389,792

Claims priority, application Germany, Aug. 23, 1972, 2241443

Int. Cl. G01n *21/40*

U.S. Cl. 356—114 **9 Claims**



Means for the automatic photoelectric trapping of local changes of optically effective object structures, e.g., of markings or unhomogeneous objects (striae), in one or two coordinate directions, wherein:

a. a beam of light rays having a rotating plane of polarization is produced;

b. a reference signal is produced of which the phase is correlated with the phase of azimuth of said rotating plane of polarization;

c. the beam of light rays is split into two components having complementary polarization states;

d. these components are conducted to the object;

e. these components are converted into electric measuring signals with or without taking into account polarization according to the number of coordinates after the components have been influenced by the object being locked-in;

f. the measuring signals are combined with the reference signal for producing output signals, the arithmetic sign of which output signals being determined from the phase difference between the signals; and

g. the output signals are evaluated with respect to the amplitude and the arithmetic sign for obtaining the position of the object structures relative to the aiming axis of the beam components.

3,833,303

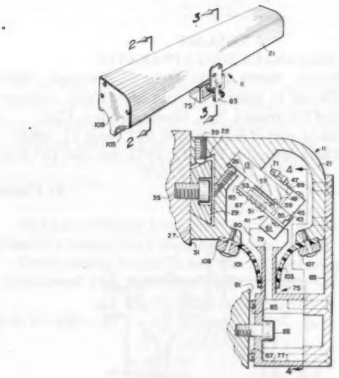
MEASURING APPARATUS USING THE MOIRE FRINGE CONCEPT OF MEASUREMENT

Richard H. Burns, Webster; Donald R. Hosack, and Helmut Welker, both of Jamestown, all of N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Oct. 6, 1972, Ser. No. 295,777

Int. Cl. G01b *11/04*

U.S. Cl. 356—169 **13 Claims**

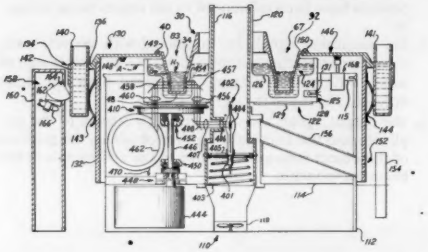


Measuring apparatus using the moire fringe concept of measurement to provide a precise digital numeric indication of displacement between two relatively movable members. The apparatus includes an accurately ruled grating or scale, a transducer head in the form of an index grating supported on a movable carriage and a transducer support housing. The scale is secured in a spar which is preferably mounted to the carriage of a machine tool such as a milling machine. The transducer support housing is mounted to the stationery part or bed of the machine tool and is provided with a cantilever spring element which holds the carriage in direct contact with the scale.

3,833,304
SPECTROPHOTOMETER USING PLURAL FILTERS

Max D. Liston, Irvine, Calif., assignor to Abbott Laboratories, Chicago, Ill.

Division of Ser. No. 133,081, April 12, 1971, Pat. No. 3,748,044, which is a continuation-in-part of Ser. No. 854,647, Sept. 2, 1969, Pat. No. 3,664,744. This application May 3, 1973, Ser. No. 357,064
Int. Cl. G01j 3/48
U.S. Cl. 356—184 10 Claims

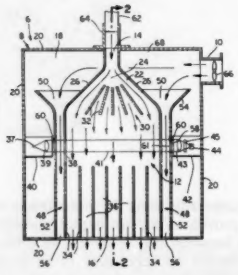


The disclosure describes apparatus for instantaneously determining the concentration of a predetermined substance that absorbs radiant energy within a predetermined band of wavelengths in the presence of other interfering substances that also absorb radiant energy in the region of the predetermined band. The determination is made by generating multiple wavelengths of radiant energy. The radiant energy is then sequentially transmitted in a single path through the substances, and the transmission is periodically interrupted by means which prevent the transmission of any radiation. The intensities of the radiant energy transmitted through the substances at the various wavelengths are then compared by electronic apparatus.

3,833,305
GAS ANALYZING APPARATUS

William A. Porter, Menlo Park; Irvin G. Burough, Santa Clara, and Donald D. Kline, Palo Alto, all of Calif., assignors to Commercial Electronics, Inc., Mountain View, Calif.

Continuation-in-part of Ser. No. 858,817, Sept. 17, 1969, abandoned. This application Feb. 22, 1972, Ser. No. 227,976
Int. Cl. G01n 21/26
U.S. Cl. 356—201 21 Claims

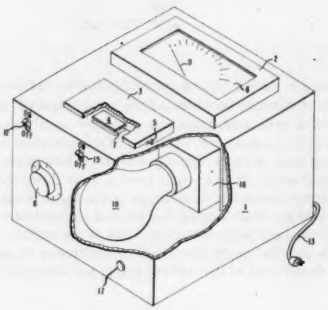


A gas analyzing apparatus employing optical analyzing means in which a gas sample is withdrawn from a gas flow and directly passed into a chamber. Opposing, spaced-apart walls of the chamber include optically aligned openings. Gas flow directionalizing ribs are upstream of the line of sight through the openings. Downstream of the line of sight the flow is deflected 90° and discharged into an enclosed space to prevent gas flow turbulence at the line of sight. An air flow is formed on the exterior of the chamber in a direction substantially perpendicular to the openings and flows past the openings. A light source and an optically sensitive detector are mounted on the exterior of the chamber adjacent to and in alignment with the openings in the chamber and are spaced from the chamber by the air flow so that the light source and the detector come in contact with the air flow but not with the gas sample. The detector output is compensated for gas density changes due to gas temperature and vapor content variations.

3,833,306
APPARATUS AND PROCESS FOR MEASURING THE LIGHT TRANSMISSION OF A PIGMENTED PAINT FILM

Nicos M. Komodromos, Flint, Mich., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 26, 1972, Ser. No. 318,501
Int. Cl. G01m 21/06; G01j 3/46
U.S. Cl. 356—205 2 Claims



The apparatus is used for measuring the light transmission of a pigmented paint film and comprises

a housing having positioned therein a microammeter electrically attached to a photoelectric cell and to a potentiometer which is used to adjust the microammeter;

an incandescent lamp positioned inside the housing and a beam of light from the lamp is directed through an opening in the housing onto the photoelectric cell;

a pigmented paint film is passed between the photoelectric cell and the beam of light from the lamp thereby changing the ammeter reading;

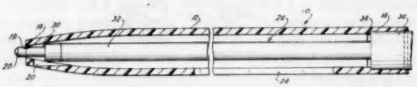
the amount of pigmentation in the paint film and the thickness of the film are directly related to the ammeter reading;

an improved process for preparing pigmented paints using the above apparatus is also a part of the invention.

3,833,307
DISPOSABLE BALL POINT PEN WITH ERASER

Marvin Kapilow, 8 Sound Rd., Rye, N.Y. 10580

Filed May 14, 1973, Ser. No. 360,069
Int. Cl. B43k 7/06
U.S. Cl. 401—195 6 Claims



A disposable ball point pen includes a tubular barrel having a forward tapered end through which the ball point is adapted

to project. The ball point extends from an ink cartridge disposed internally of the barrel and in concentric relationship therewith. An eraser is at the rear end of the barrel and is solvent cemented therein upon being placed into engagement with the rear end of the ink cartridge with both parts serving to self-locate one another within the barrel interior. A longitudinally extending slot in the barrel permits the cartridge to be observed to thereby operate as an indicator of the ink supply. In this manner the barrel need not be transparent and may adapt a variety of colors and designs. A cap covers the ball point and tip of the barrel when the pen is carried in the pocket of the user. This cap may be removed and retained by a clip on the side of the rear of the barrel, thereby enabling the user to write with the pen and at the same time have ready access to the eraser where desired.

3,833,308

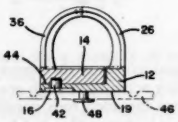
BINDER FIXTURE

Paul E. Seaborn, Los Gatos, Calif., assignor to The Mead Corporation, Dayton, Ohio

Filed Aug. 1, 9173, Ser. No. 384,458

Int. Cl. B42f *3/04*

U.S. Cl. 402—56 **8 Claims**



A binder fixture suitable for use in loose leaf notebooks and in which the binder loops are formed in segments with half the segments mounted on a stationary base plate and the other matching half mounted on a slide plate mounted for sliding movement transversely of the base plate. The slide plate is cam actuated by a cam bar slidably mounted in the base plate and having pins projecting upwardly through the base plate into cam grooves in the lower surface of a slide plate. The base plate is provided with T-shaped rails which are received in T-shaped slots in the lower surface of the base plate to guide the slide plate during sliding movement thereof.

3,833,309

BALL JOINT

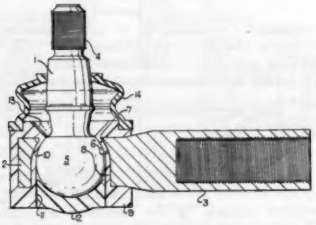
Ronald Henry Hobbs, Halstead, England, assignor to Cam Gears Limited, Hitchin, England

Filed Jan. 8, 1973, Ser. No. 321,829

Claims priority, application Great Britain, Jan. 11, 1972, 1238/72

Int. Cl. F16c *11/06*

U.S. Cl. 403—122 **7 Claims**



A ball and socket joint useful in vehicle steering assemblies composed of a metal ball stud, a metal stem with an eye end, a main open-ended plastic socket molded around the eye end of the stem defining a ball socket surrounded by the eye and receiving the shank of the ball stud through one end thereof. The other end of this plastic socket is closed by a plastic cup pressed into the socket against the ball head to preload the head against the bearing wall of the main plastic part and secured to this part by fusion, cementing or the like. The ball end of the stud is thus surrounded by a synthetic plastic bearing which in turn embraces the end of a stem extending laterally from the bearing. The ball and socket components of the joint are in preloaded relation, and articulate relative to each other in a smooth manner without accommodating shifting of the ball stud either laterally or axially from its fixed tilting center.

3,833,310

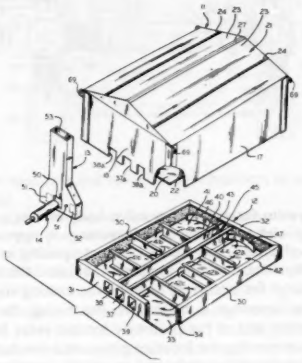
HOT BOX FOR ASPHALT

Herman T. Childree, Tyler, and Stewart T. Trawick, Dallas, both of Tex., assignors to Sabine Manufacturing, Inc., Dallas and Howe-Baker Engineers Inc., Tyler, both of, Tex., part interest to each

Division of Ser. No. 176,108, Aug. 30, 1971, Pat. No. 3,721,226. This application Dec. 18, 1972, Ser. No. 316,285

Int. Cl. E01c *7/06*

U.S. Cl. 404—75 **1 Claim**



A hot box for maintaining asphalt at elevated temperatures including a closed and insulated container, a service apron, a heat exchanger for heating the container, a burner capable of producing high velocity hot gases for driving a mixture of hot gases and air through the heat exchanger and a temperature control system.

3,833,311

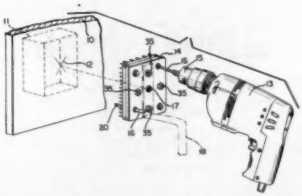
WALL OUTLET AND SWITCH BOX HOLE CUTTER

John D. Chailer, 2115 Weatherbee, Fort Worth, Tex. 16110

Continuation-in-part of Ser. No. 258,081, Aug. 23, 1972, abandoned. This application Sept. 25, 1972, Ser. No. 291,726

Int. Cl. B23b *51/06, 41/04*

U.S. Cl. 408—22 **2 Claims**



A cutter accessory adapted to be used with portable power tools for cutting holes in sheet material such as wallboard and panelling. The device includes a housing; an endless chain disposed in the housing for rotation therein, and a plurality of cutting edges carried by the chain and extending forwardly from the housing. A drive member located in the housing is

adapted for coupling to a rotary power source such as a drill for driving the chain. Improvements are described which permit the hole to have any desired shape (e.g., rectangular), to be stable against motion in the plane of the workpiece and to facilitate centering of the cutter on a desired location.

3,833,312

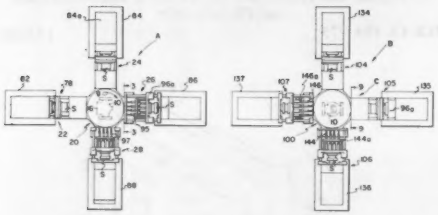
A METHOD FOR MACHINING VALVE BODY CASTINGS

Harry E. Miles, and Dale W. Wright, both of Saginaw, Mich., assignors to Miles Machinery Company, Saginaw, Mich.

Division of Ser. No. 153,205, June 15, 1971, Pat. No. 3,732,025. This application Jan. 22, 1973, Ser. No. 325,248

Int. Cl. B23b *39/20, 39/22*

U.S. Cl. 408—42 **12 Claims**



A and system for machining valve body castings, and the like, having inlet and outlet cored openings in opposite ends thereof, a valve seat, and a cored bonnet opening in the side thereof comprising: locating plugs movable into the inlet and outlet openings for positively locating the casting via the opposed cored openings a cutter for; machining the bonnet opening and/or seat of the positively located valve body; apparatus for removing the locating plugs; and mechanism for repositioning the valve body and positively locating on the machined bonnet opening and/or seat, and then machining the cored inlet and outlet openings or flange openings in opposite ends thereof.

3,833,313

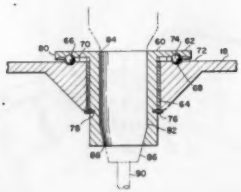
DRILLING DEVICE

Jacque K. Gallion, 1410 S. Oak Cliff Blvd., Dallas, Tex. 75208

Continuation-in-part of Ser. No. 575,740, Aug. 29, 1966, Pat. No. 3,464,295. This application Aug. 11, 1969, Ser. No. 849,113

Int. Cl. B23b *45/14*

U.S. Cl. 408—112 **7 Claims**



A drilling device for supporting a drill with the axis of the drill held in a desired relationship to a workpiece and permitting relative axial movement of the drill toward the workpiece.

3,833,314

DEVICES FOR CONTROLLING THE RELATIVE AXIAL MOVEMENTS OF TWO COAXIAL ROTARY SHAFTS

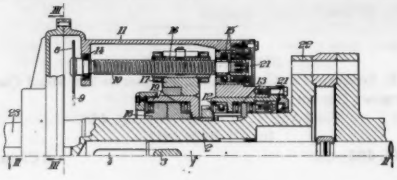
Felix Amiot, Paris, France, assignor to Constructions Mecaniques De Normandie, Paris, France

Filed Jan. 18, 1973, Ser. No. 324,658

Claims priority, application France, Jan. 25, 1972, 72.02424

Int. Cl. B63h *3/04*

U.S. Cl. 416—164 **10 Claims**



A rod is arranged axially at the centre of a rotary hollow shaft. A drive motor actuates through gear wheels and chains the rotation of two threaded rods parallel to the shaft and fixed axially each coacting with a nut fast axially to the rod through a mechanism, roller stops, a ring and a cotter pin. The device is particularly useful for controlling the variations in orientation of the propeller blades of a boat.

3,833,315

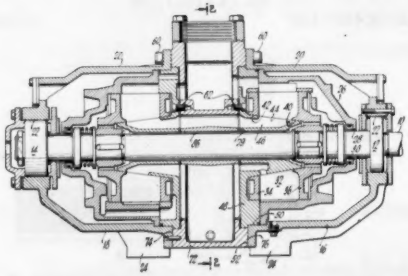
LIQUID RING PUMP OF THE DUPLEX TYPE

James B. Fitch, Stratford, Conn., assignor to The Nash Engineering Company, Norwalk, Conn.

Filed Jan. 30, 1973, Ser. No. 327,981

Int. Cl. F04c *19/00*

U.S. Cl. 417—68 **4 Claims**



A liquid ring pump of the duplex, center-port type in which the two rotors are mounted upon a common shaft and disposed between them and common to each section of the pump, is a single header to which the outlet from the pump sections are delivered and from which the intake is drawn.

3,833,316

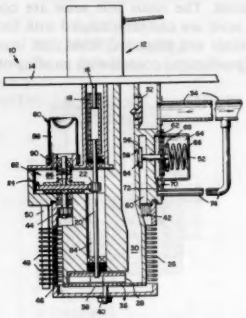
VARIABLE VOLUME PUMP

James M. Kemper, Hollywood, Calif., assignor to Monogram Industries, Inc., Los Angeles, Calif.

Division of Ser. No. 16,740, March 5, 1970. This application Jan. 17, 1972, Ser. No. 218,288

Int. Cl. F04b *49/08*

U.S. Cl. 417—307 **1 Claim**



A pumping system for a plurality of recirculating toilets sharing a common tank is described. A variable volume pump has a by-pass valve which is controlled by a pressure sensor in the flush line, to prevent excessive fluid pressure in the toilets.

3,833,317

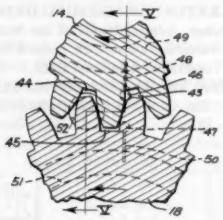
ROTARY GEAR MOTOR/PUMP HAVING HYDROSTATIC BEARING MEANS

Rolling Douglas Rumsey, 148 Summer St., Buffalo, N.Y. 14222

Continuation-in-part of Ser. No. 120,890, March 4, 1971, abandoned. This application Jan. 2, 1973, Ser. No. 319,978

Int. Cl. F01c *21/00*; **F03c** *3/00*; **F04c** *15/00*

U.S. Cl. 418—77 **7 Claims**



A gear hydraulic pump or motor utilizes a sun gear, ring gear, and pairs of planet gears in a planetary arrangement with power shafting connected to either sun or ring gear or both. All gears are centered in their clearance by hydrostatic bearings supplied with fluid from the tooth trapping zones.

3,833,318

ROTARY COMPRESSOR

Shozo Nakayama; Masayuki Kurahashi, both of Kariya, and Tuneo Sugiura, Hekinan, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya-shi, Japan

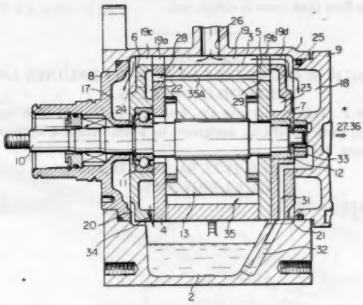
Filed June 20, 1973, Ser. No. 371,822

Claims priority, application Japan, July 27, 1972, 47-88852

Int. Cl. F04c *29/02*; **F25b** *43/02*; **B01d** *45/00*

U.S. Cl. 418—100 **10 Claims**

A rotary compressor having front, and rear housings positioned at the ends of a hollow shell, a horizontal cylinder disposed in the shell and having pressure plates attached to the front and rear ends thereof and further comprising a front housing means interposed between the front housing and the front pressure plate for defining a first front chamber connected by fluid passage means to said inlet port, between the inner wall of said front housing and the outer wall of said front housing means, and a second front chamber connected by fluid passage means to said suction chambers of said cylinder, between the inner wall of said front housing means and the outer face of said front pressure plate, said front housing means having a through-hole to connect said first and second front chambers, and channels adjacent to said oil reservoir to



connect said first and second front chambers to said oil reservoir, and;

a rear housing means interposed between the rear housing and the rear pressure plate for defining a first rear chamber connected fluid passage means to said inlet port, between the inner wall of said rear housing and the outer wall of said rear housing means, and a second rear chamber by fluid passage means connected to said suction chambers of said cylinder, between the inner wall of said rear housing means and the outer face of said rear pressure plate, said rear housing means having a through-hole to connect said first and second rear chambers, and channels adjacent to said oil reservoir to connect said first and second rear chambers to said oil reservoir.

3,833,319

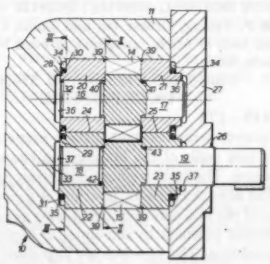
POSITIVE-DISPLACEMENT LIQUID-PRESSURE MACHINES AND PRESSURE-BALANCED JOURNAL/THRUST BUSHES THEREFOR

John Christopher Eglington, Flint, Stroud, England, assignor to Dowty Hydraulic Units Limited, Cheltenham, England

Filed Mar. 21, 1973, Ser. No. 343,456

Int. Cl. F01c *19/08*; **F03c** *3/00*; **F04c** *15/00*

U.S. Cl. 418—132 **6 Claims**



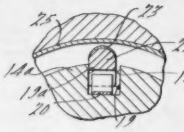
A positive-displacement machine having meshing rotors is provided with an end plate in the form of a journal/thrust

bush, associated with a rotor, which has a groove forming a speed slot associated with its face adjacent to the rotor. The end plate is so subjected to liquid pressures on defined areas of its end face remote from the rotor as to be urged into adequate sealing engagement with the rotor. A zone of the said face of the end plate adjacent to the rotor which is subjected, during operation of the machine, to fluctuating pressures is placed in communication through a passage in the end plate with a zone of predetermined area associated with the end face of the end plate remote from the rotor and sealed from the surrounding area of that end face. In this way that sealed zone is subjected to fluctuating pressures which are substantially equal to but oppositely directed with respect to the fluctuating pressures to which the first said zone is subjected.

3,833,320
COATING FOR APEX SEALS OF ROTARY ENGINES AND METHOD OF MAKING

Yeshwant P. Telang, Grosse Ile, and James C. Uy, Dearborn Heights, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed July 5, 1973, Ser. No. 376,860
Int. Cl. F01c *21/00*
U.S. Cl. 418—178 **18 Claims**



A rotary internal combustion engine is disclosed having a rotor housing presenting an internal epitrochoid surface electrolytically coated with a composite of nickel and silicon carbide or coated with tungsten carbide. A rotor piston is mounted for planetary movement within the rotor housing and carries a plurality of apex seal strips each comprised of a wear-resistant portion and a supporting portion. The wear-resistant portion is constituted of a fused composite of generally equally hard particle types, one type comprising martensitic stainless steel and the other particle type comprising a nickel-based alloy. At least one of the particle types contains molybdenum disulfide or graphite. An intermediate coating of nickel aluminide may preferably be used therebetween. The supporting portion is constituted of a material having a lower specific gravity than the wear-resistant portion and a greater yield strength. The supporting portion may be preferably comprised of aluminum.

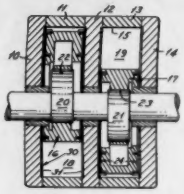
3,833,321
WEAR-RESISTANT COATING FOR ROTARY ENGINE SIDE HOUSING AND METHOD OF MAKING

Yeshwant P. Telang, Grosse Ile, and James C. Uy, Dearborn Heights, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed July 5, 1973, Ser. No. 376,861
Int. Cl. F04c *15/00*
U.S. Cl. 418—178 **9 Claims**

An improved wear-resistant surface preparation is used on the inner side walls of the combustion chamber of a rotary piston engine. The improvement comprises deposition of two distinct but admixed metallic powders of generally equal hardness; one of the powders contains fluxing agents which enable the deposited powders to self-sinter if deposited in a semi-plastic condition. The powders are deposited on a previously undercut cast iron side housing. The resulting coating composition is characterized by minimum hardness value of R_c 30 at elevated operating temperatures of 400°F. The composition retains a stable hardness at elevated temperature levels up to 1,100°F. The coating may have a porosity of 3–9 percent, but particle size is controlled to limit the porosity to 5 percent which is compatible with lubricating requirements of a rotary engine. The coating composition is deposited across the entire area circumscribed by the path of the outer most side point of the apex seals carried by the rotary piston; the path is substantially commensurate or approaches the entire shape of the epitrochoid chamber. The coating is compatible with the composition of the rotor side seals, oil seals and corner seals bearing thereagainst. The rotor side seals are comprised of cast iron, the oil seals are cast iron coated with limited chromium, the corner seals are prepared from cast iron, and the apex seals are strips of metal coated with an alloy of iron and titanium carbide with graphite.

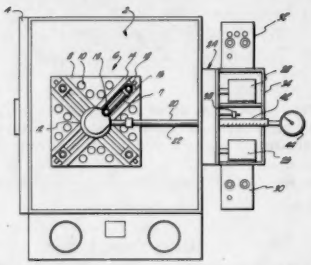
A method is disclosed comprising: (1) machining a cast side housing structure to a depth sufficient to accommodate a slightly oversized finish coating. The cast structure is undercut, grit blasted and preheated to 200°F., (2) a coating of admixed martensitic stainless steel and an equally hard nickel-based alloy is flame sprayed upon the machined area including approximately ⅜ of an inch margin beyond the undercut area, the spraying being conducted by rotating the surface to be sprayed along with radial and rotative movement of the spray gun arranged to direct the spray perpendicular to the surface, (3) soaking the flame sprayed coating immediately after deposition with oil, and (4) grinding the surface finish to a predetermined reference thickness.



3,833,322
APPARATUS FOR FORMING DRIVE BELTS

James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Albert Topits, Jr., Altadena, Calif.

Filed Aug. 31, 1973, Ser. No. 393,525
Int. Cl. B29h *7/22*; **B29d** *29/00*
U.S. Cl. 425—28 B **15 Claims**



An apparatus for manufacturing belts, such as seamless belts, is provided having relatively movable rollers that are mounted in an oven. A belt blank, for example, of a thin polyester film, is rotated on the rollers as heat is applied. Four rollers, each mounted on a separate roller assembly, are movable along appropriate tracks while a fifth centrally located roller is stationary. A pair of DC motors are operatively con-

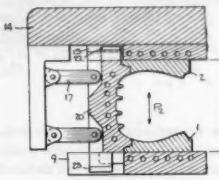
nected to a speed reduction gear assembly to provide a pair of rotating drive shafts that extend into the oven. One rotating shaft drives all of the rollers through a rotational gear assembly while the other drive shaft is capable of positioning the movable rollers through respective rotating threaded shafts. Control devices are provided for controlling the motors while measuring devices are operatively connected to the positional drive shaft to indicate the position of the rollers.

3,833,323

SEGMENTAL MOLD

Lambert Pasch, Nutheim, Germany, assignor to Uniroyal AG, Aachen, Germany

Filed Feb. 26, 1973, Ser. No. 335,827
Int. Cl. B26h *5/02*
U.S. Cl. 425—47 **13 Claims**



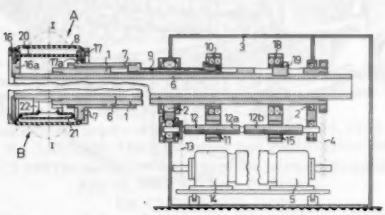
A segmental mold comprising a pair of sidewall-shaping members coaxially confronting one another and supported such that at least one is movable axially relative to the other, and an annular array of tread-shaping segments concentrically interposed between the members and supported for movement axially in parallel relation and radially from an open annular array wherein the segments are spaced from one another to a closed annular array of reduced extent wherein the segments abut one another. The segments are commonly associated with one of the members through the intermediary of loosely associated mutually interfitting portions so as to effect a reduction in sliding friction therebetween.

3,833,324

DEVICE FOR EXPANDING RAW PNEUMATIC TIRES BUILT UP IN FLAT FORM

Friedrich Klopper, Barsinghausen, and Rolf Bullmann, Hannover, both of Germany, assignors to Continental Gummi-Werke Aktiengesellschaft, Hanover, Germany

Filed May 7, 1973, Ser. No. 357,868
Int. Cl. B29b *5/02*
U.S. Cl. 425—52 **9 Claims**



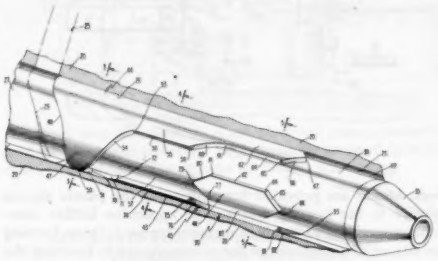
A device for expanding raw pneumatic tires built up in flat form and provided with two tire beads, which includes a rotatable axially non-displaceable shaft having axially slidably arranged therein an inner shaft with a first disc firmly connected to one end of the inner shaft while an outer shaft is axially slidably mounted on and surrounds the hollow shaft. That end of the outer shaft which is closest to the first disc has firmly connected thereto a second disc in cooperation with the first disc to receive therebetween the beads of the tire to be expanded and the inflatable bellows for expanding the tire to be shaped, an actuating mechanism being provided for selectively moving the first and second discs toward and away from each other.

3,833,325

BALANCED FLOW EXTRUSION HEAD

John C. Ramsey, 498 Island Way, Franklin Lakes, N.J. 07417

Filed Aug. 23, 1972, Ser. No. 283,059
Int. Cl. B29f *3/10*
U.S. Cl. 425—113 **7 Claims**



A plastic material extruding crosshead for uniformly sheathing a core passing forwardly therethrough. The crosshead has a main, circular cylindrical bore therein, and a centrally disposed elongated core guiding tube disposed within the bore coaxially thereof. An extruding die is mounted at the forward end of the bore; the bore and the central tubular member formed therebetween a sleeve-like chamber extending forwardly to the die. The apparatus includes mechanism for delivering plastic material under pressure in a sidewise direction to the rear end of the chamber, there being means at such rear end of the chamber for diverting the plastic material forwardly along the chamber as it is delivered therefrom from the material delivering mechanism. In accordance with the invention there are provided within the chamber means for creating a balanced flow of plastic material as it nears the rear face of the die and as it flows forwardly about the core being sheathed. Such means includes a first flow-constricting means which forces the plastic material to pass in a single stream longitudinally of the central tubular member in a zone remote from the plastic material delivering mechanism, a further means which divides such single stream of plastic material into a plurality of oppositely symmetrically disposed streams, and a further means which divides each of such two symmetrically disposed streams into a plurality of further streams. The resulting plurality of streams, which are similar and equally angularly spaced about the axis of the chamber, flow forwardly into an unbroken, completely annular forward portion of the chamber immediately to the rear of the extrusion die, where such four streams unite in order to flow uniformly about the core, and with the core pass outwardly through the passage in the extrusion die.

3,833,326

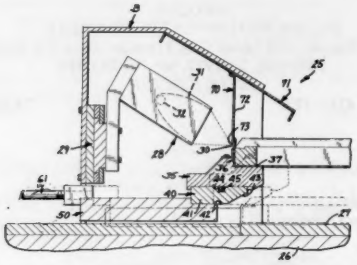
POST-FORMING APPARATUS

Lawrence W. Peterson, Marine-on-the-St. Croix; Thomas J. Gallo, St. Paul; Kenneth L. Peterson, Bayport, and Donald L. Garofalo, St. Paul, all of Minn., assignors to Andersen Corporation, Bayport, Minn.

Filed May 9, 1973, Ser. No. 358,721
Int. Cl. B29c *24/00*
U.S. Cl. 425—174.4 **9 Claims**

Apparatus which is useful to post-form marginal tabs of a decorative plastic shroud to embrace a supporting frame in

the manufacturing of plastic shutters, panels, and the like. The apparatus comprises a first station which includes heating means which are mounted on a base (e.g., a table) to concentrate heat along one or more longitudinally extended focal



lines. Means are provided for positioning the plastic shroud relative to the heating means. The apparatus further comprises a second station which includes means for post-forming the heated marginal tabs of the plastic shroud to embrace the supporting frame.

3,833,327

METHOD OF AND APPARATUS FOR REMOVING WOOD PARTICLES YIELDED IN CHIPBOARD PRODUCTION

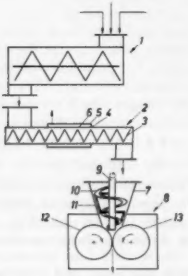
Hans-Joachim Pitzer, Heilbronn, and Wolfgang B. Pietsch, Lowenstein-Hirrweiler, both of Germany, assignors to Hutt GmbH, Leingarten, Germany

Filed Mar. 16, 1972, Ser. No. 235,209

Claims priority, application Switzerland, Oct. 22, 1971, 15430/71

Int. Cl. B29c *3/02, 3/04*

U.S. Cl. 425—203 **3 Claims**



A system for use in the manufacture of chipboard including a method and apparatus initially involving the use of wood particles including grinding dust, sawdust, scrap wood and similar particles normally available in operations involved in the conventional manufacture of chipboard. The particles are located in a mixing means along with an adhesive, and a compacting apparatus is provided for forming the mixture of particles and adhesive into chip-shaped compacts. These compacts are then employed with conventionally produced chips to provide the material for making the chipboard.

3,833,328

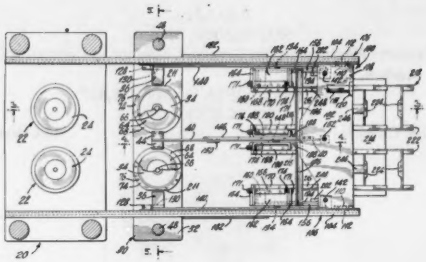
MACHINE FOR MANUFACTURING DISC RECORDS

Leonard Palmer, 22 Lakeview Ave., Elizabeth, N.J. 07932, and Joseph Flusfeder, 801 N. Broad St., Elizabeth, N.J. 07201

Filed Nov. 24, 1972, Ser. No. 309,588

Int. Cl. B29d *17/00*

U.S. Cl. 425—308 **10 Claims**



A machine for manufacturing disc records. The machine has a molding station where records are molded, a trimming station where flash is trimmed from the molded records, and a receiving station where finished records are received. A transfer assembly simultaneously transfers the molded records from the molding station to the trimming station and the finished records from the trimming station to the receiving station. At the receiving station envelopes are automatically situated in a condition for receiving the finished records so that the finished records are automatically placed in envelopes.

3,833,329

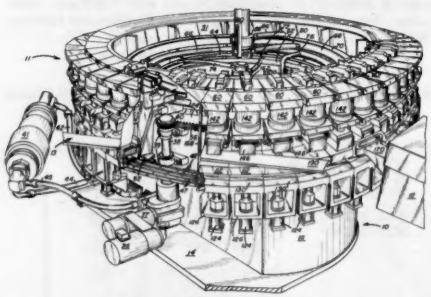
INJECTION MOLDING APPARATUS

Lawrence A. Ulmachneider, and Edward H. Dowling, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 86,668, Nov. 4, 1970, abandoned. This application Jan. 15, 1973, Ser. No. 323,606

Int. Cl. B29f *1/00, 1/14*

U.S. Cl. 425—246 **18 Claims**



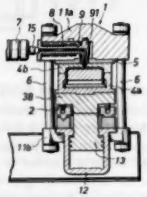
Injection molding apparatus which comprises a rotatable rotor member having a plurality of mold assemblies disposed about the periphery thereof. Each mold assembly has an injection chamber and an openable mold cavity. Drive means is arranged to continuously rotate the rotor member and the mold assemblies. A stationary molten plastic supply means is disposed adjacent the periphery of the rotor member and is arranged to supply for example molten thermoplastic material to the injection chamber of a mold assembly as it is continuously moved past the supply means. Each mold assembly has an in-

jection means arranged for movement into the injection chamber after the mold assembly has moved past the supply means to inject the molten thermoplastic material in the injection chamber into the mold cavity. Means is arranged to open each of the molds after the molten material injected therein has solidified, and to close the mold after removal of the solidified material therefrom and before the mold reaches the supply means. Conveyor means is also arranged to enter between the opened molds whereby the part may be removed with a predetermined orientation.

3,833,330
RECIPROCATING INJECTION MOLDING APPARATUS AND MOLD CLAMPING MEANS

Katashi Aoki, 6037, Oaza Minamijo, Sakaki-machi, Hanishina-gun, Nagano-ken, Japan

Division of Ser. No. 94,662, Dec. 3, 1970, abandoned. This application May 23, 1973, Ser. No. 363,297
Claims priority, application Japan, Dec. 9, 1969, 44-98519; Mar. 25, 1970, 45-24628
Int. Cl. B29f *1/03*
U.S. Cl. 425—247 **1 Claim**



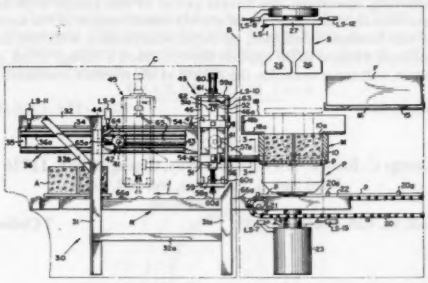
The apparatus generally comprising a mold clamping device including a mold clamping ram vertically operable toward a mold receiving chamber, an injection nozzle directed into the mold receiving chamber, and one or more metal molds each provided with a mold opening-and-closing device and mounted on a horizontally reciprocable plate entering into and retracting out of the mold receiving chamber, and the process is so organized that when one of the metal mold is transported, in its closed state, into the mold receiving chamber under a horizontal movement of the reciprocable plate, the mold clamping ram is operated for clamping the metal mold and a plastic material is injected into the mold cavity of the metal mold through the injection nozzle, and when the reciprocable plate moves out to another position, the metal mold thus injected is opened by means of the mold opening-and-closing device and the molded product is delivered.

3,833,331
APPARATUS FOR FORMING BUILDING BLOCKS

Thomas W. Springs, Alpena, Mich., assignor to Besser Company, Alpena, Mich.

Continuation-in-part of Ser. No. 858,032, Sept. 15, 1969, Pat. No. 3,679,340. This application July 21, 1972, Ser. No. 273,989The portion of the term of this patent subsequent to July 25, 1989, has been disclaimed.
Int. Cl. B28b *1/08, 7/18*
U.S. Cl. 425—253 **5 Claims**

Apparatus for forming a building block, having conventional vertically extending, upwardly opening block cavities with a longitudinally extending channel in its lower surface. The block is made in a vibrated mold box assembly, open at its upper and lower ends, and a pallet is movable into position to form a removable mold cavity closing bottom wall for the assembly. A longitudinally removable core, which is resiliently mounted on a core adapter so that it can vibrate with the mold box assembly, is moved from a removed position to a position beneath the mold cavity and the pallet is then moved vertically to sandwich the core between the mold and pallet. After cementitious material is introduced into the mold cavity to form

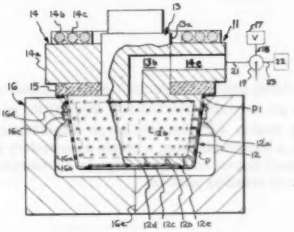


the block and the assembly is vibrated, the core is removed, and the block and pallet are then vertically stripped from the mold assembly and moved away for further processing.

3,833,332
APPARATUS FOR FORMING CONTAINERS OF THERMOPLASTIC MATERIAL

Ralph G. Amberg, Monticello, Ind., and Stephen W. Amberg, St. James, N.Y., assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Nov. 17, 1972, Ser. No. 307,639
Int. Cl. B29d *23/03*
U.S. Cl. 425—387 B **6 Claims**



Method and apparatus for reforming thermoplastic preform or parisons of a nestable configuration into non-nestable containers which are adapted to receive threaded metallic or plastic closures. Each preform is inserted over the end of a complementally shaped heating mandrel to heat the preform to an elevated temperature at which it is sufficiently soft to permit it to be reformed into a different configuration by blow molding. The preform is retained in place during the heating step by a vacuum applied to the inner surface of the preform through the mandrel. Prior to or during the heating step, the mandrel, with the preform in place, is inserted into the open top of a mold, the inner surface of which is, in a major lower portion, configured in the shape of a jar or other container of non-nestable configuration. The upper minor portion of the mold is configured in the shape of an internally threaded cylinder. After the preform reaches a suitably high temperature, the vacuum to the inside surface thereof is terminated and air or other gas pressure is applied thereto through the mandrel to blow or expand the preform to correspond to the interior of the mold, thereby to provide a container with an externally threaded upper neck portion which is adapted to receive a threaded closure. Good contact between the preform heating mandrel and the mold is obtained by

providing the preform with a short externally extending continuous flange at its larger open end which serves as a gripping surface to be tightly engaged between the structure carrying the mandrel and mold structure. To avoid the need for a trimming operation, the lateral extent of this flange must be less than the lateral extent of the threaded portion of the neck of the finished container, to avoid interference with the associated closure to be applied thereto. Such a flange, if left in place, will serve to stiffen the mouth of the finished container.

3,833,333

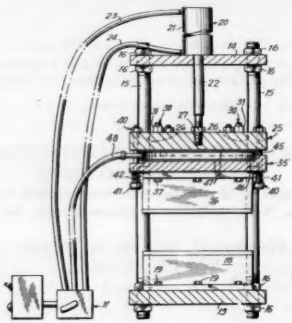
PRESS CONSTRUCTION

George C. Britten, 350 Mariners Way, Copiague, N.Y. 11726

Filed Nov. 6, 1972, Ser. No. 304,192

Int. Cl. B29c *3/00*

U.S. Cl. 425—406 **7 Claims**



A molding press construction wherein a pair of die-holding platens are movable toward and away from each other by a primary mover of relatively large displacement and lesser force to a locked position, wherein a secondary mover of relatively small displacement and large force maintains the platens together in molding position.

3,833,334

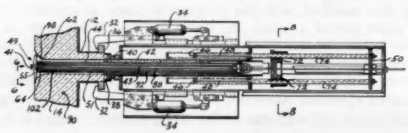
APPARATUS FOR RELINING A BOF VESSEL TAP HOLE

Lawrence Raymond Riley, Palos Park, Ill., assignor to Combustion Engineering Inc., Windsor, Conn.

Filed July 5, 1973, Ser. No. 376,637

Int. Cl. C21b *7/12*

U.S. Cl. 425—449 **5 Claims**



Apparatus for relining the tap hole of a BOF vessel with refractory material after it has been worn or eroded away.

3,833,335

FLARE INSTALLATION FOR THE COMBUSTION OF HYDROCARBON GAS WITH PRIOR ADMIXING OF AIR

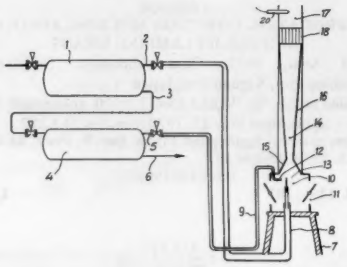
Flavien Lazarre; Jacques Rozand; Gilbert Blu, and Jean-Pierre Bimond, all of Pau, France, assignors to Societe Nationale Des Petroles D'Aquitaine, Paris, France

Filed Aug. 3, 1973, Ser. No. 385,329

Claims priority, application France, Aug. 4, 1972, 72.28207

Int. Cl. F23d *13/20*

U.S. Cl. 431—202 **3 Claims**



An improved flare installation to burn excess hydrocarbon gas, comprising a mixing chamber receiving atmospheric air and having an inlet for gases from a low-pressure separator, and an injector for gas from a high-pressure separator, on the same axis as a mixer, while a burner is provided below this chamber. The improved device is specially suitable for the non-polluting burning of gases accompanying liquid hydrocarbons in production fields, during testing, or in refinery plants.

3,833,336

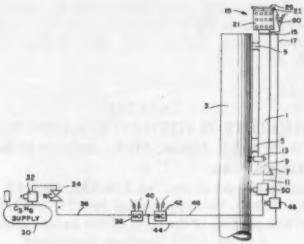
REMOTE FIRE STACK IGNITER

William L. Ray, Huntsville, Ala., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Aug. 29, 1973, Ser. No. 392,823

Int. Cl. F23d *13/20*

U.S. Cl. 431—202 **10 Claims**



An igniter mounted on a vent stack with an upper, flame cage near the top of the stack to ignite emissions from the stack. The igniter is a tube with a lower, open, flared end having a spark plug near the lower end and a solenoid-controlled valve which supplies propane fuel from a supply tank. Propane from the tank is supplied at the top under control of a second, solenoid-controlled valve. The valve controlling the lower supply is closed after ignition at the flame cage. The igniter is economical, practical, and highly reliable.

3,833,337

FLARESTACKS

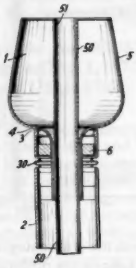
Denis Henry Desty, Weybridge, and Christopher John Young, Horton, both of England, assignors to The British Petroleum Company Limited, London, England

Filed Apr. 18, 1972, Ser. No. 245,223

Claims priority, application Great Britain, Apr. 29, 1971, 12069/71

Int. Cl. F23q 9/00

U.S. Cl. 431—284 5 Claims



A flare stack burner tip using the Coanda effect, the bore of the Coanda body is used as a feed line for high pressure gas and the Coanda director surface is positioned across the outlet of the high pressure gas line so as to cause entrainment of air into the fuel gas stream. The feature of the invention is a self adjusting slot between the Coanda surface and gas inlet which adjusts itself automatically to the flow rate of high pressure gas so that a substantially constant pressure is maintained.

3,833,338

SURFACE COMBUSTION BURNER

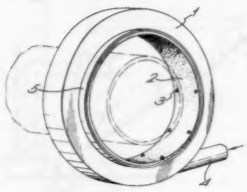
John Badrock, Southport, England, assignor to Cooperheat, Southport, England

Continuation-in-part of Ser. No. 260,433, June 7, 1972, abandoned. This application Mar. 30, 1973, Ser. No. 346,457

Claims priority, application Great Britain, June 6, 1972, 19458/72; June 8, 1971, 19458/71

Int. Cl. F23d 13/12, 13/14

U.S. Cl. 431—328 10 Claims

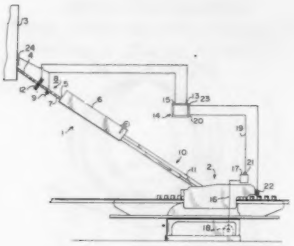


A surface combustion burner for burning a mixture of air and gaseous fuel. The burner includes a housing having an inlet for the air and gaseous fuel and an outlet covered by a layer of deformable, porous ceramic fibre material through which the air and gaseous fuel permeates and is lit on the surface. A foamed metal layer acts as a flame trap to prevent lighting back. An annular burner can be used to anneal a welded pipe.

3,833,339
METHOD AND SYSTEM FOR STERILIZING MAGNETICALLY ATTRACTED OBJECTS

Joseph C. Pacilio, Niles, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Filed Mar. 2, 1972, Ser. No. 231,321
Int. Cl. B65b *55/06, 57/02*
U.S. Cl. 21—80 10 Claims



A sterilizing conveyer system having a sterilizing chamber. In this apparatus, a chute brings a magnetizable article to the sterilizing chamber. An overhead conveyer has a magnet located above the conveyer and the articles are lifted up against the conveyer and moved along by it. The magnetizable articles are sterilized by a sterilizing fluid which is jetted against their bottom side as they are conveyed through the chamber. The second chute is of a length to accommodate in storage all of the articles in the system in the event of breakdown.

3,833,340
DETERMINATION OF WATER CONTENT OF LIQUID MIXTURES

Graham P. Jones, London, England, and Frederick R. Mahn, Verona, N.J., assignors to Drew Chemical Corporation, Parsippany, N.J.

Filed Dec. 4, 1972, Ser. No. 311,807
Int. Cl. G01n *25/56*
U.S. Cl. 23—230 HC 6 Claims

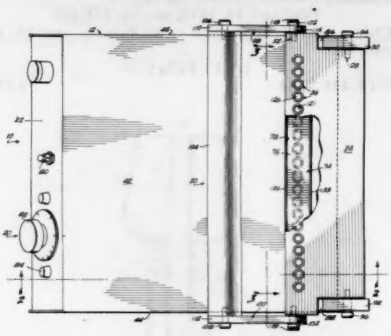
A material which produces heat when in contact with water is added to a water containing liquid mixture and the increase in temperature is recorded. From a known relationship between water content and temperature increase resulting from contact between water and the material, the water content of the liquid mixture is easily determined.

3,833,341
SPOTTING DEVICE

Paul M. Tocci. 12301 S. W. 64th Ave., Miami, Fla. 33156

Filed Feb. 26, 1973, Ser. No. 335,708
Int. Cl. B05c *11/00;* G01n *31/08*
U.S. Cl. 23—259 12 Claims

A spotting device for depositing samples of urine, urine extracts or blood, for example, in an organic or inorganic solvent on chromatographic plates or sheets. The device includes a holding bar, adapted to receive a plurality of disposable funnels therethrough, each funnel providing an open top, above the holding bar for reception of a sample, and a small orifice in its lower end, below the holding bar, for depositing the sample on a chromatographic plate or sheet which is carried on a heating bar which is manually set to a predetermined degree of temperature. The carrying plate is pivotal from a raised position to a position wherein the lower tip ends of the funnels

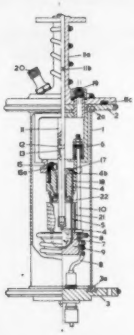


are in tight contact with the chromatographic plate or sheet on the heating bar. The funnels are preferably formed of an inexpensive synthetic material such as polyethylene and are intended for one-time use.

3,833,342
APPARATUS FOR THE PREPARATION AND GROWTH OF CRYSTALLINE MATERIAL

Charles Harry Holliday, Newland; William Ritchie MacEwan; John Brian Mullin, both of Malvern Link, and Alan Edward Valender Webb, Malvern, all of England, assignors to National Research Development Corporation, London, England

Filed Apr. 18, 1972, Ser. No. 245,088
Claims priority, application Great Britain, Apr. 21, 1971, 10595/71
Int. Cl. B01j *17/18*
U.S. Cl. 23—273 SP 8 Claims



Apparatus for the treatment and growth of an at least partially volatile crystallisable material includes a chamber of the type in which the walls remain fixed relative to each other during the treatment and growth of the material, means for establishing a liquid seal sensitive to a pressure difference across the walls of the chamber and means responsive to the liquid seal for limiting the pressure difference across the walls of the chamber to achieve a pressure balance. The apparatus may be used, for example, for vertical crystal pulling or

horizontal zone melting. The means responsive to the liquid seal may include a sensor responsive to the position of liquid in the means for establishing a liquid seal, and a control valve responsive to the sensor and under the control of which gas may be admitted to or withdrawn from a further chamber surrounding the first mentioned chamber.

3,833,343

PROCESS FOR PRODUCTION OF CARBON-BEARING SCRAP AND PRODUCT

Michael O. Holowaty, Crown Point, Ind., and Harold T. Stirling, Pittsburgh, Pa., assignors to Carbo-Scrap, Inc., Gary, Ind.

Continuation-in-part of Ser. No. 138,283, April 28, 1971, abandoned. This application May 1, 1972, Ser. No. 248,946

Int. Cl. B21c *37/00*

U.S. Cl. 29—180 R **10 Claims**

Scrap or other metal is heated to remove volatilizable contaminants and raise its temperature and then coated with a carbonaceous material to protect the scrap from subsequent oxidation and the entry of contaminants. The coating conditions are such to pyrolyze the carbonaceous material and provide an excellent reducing and/or recarburizing agent when the scrap is used in later refining or melting operations.

3,833,344

FRICTION MATERIAL OF THE SINTERED BRONZE TYPE

Gunter Gerloff, Glinde near Hamburg; Klaus Mertl, and Ulrich Volker, both of Reinbek, all of Germany, assignors to Jurid Werke GmbH, Glinde near Hamburg, Germany

Filed Mar. 7, 1972, Ser. No. 232,503

Claims priority, application Germany, Apr. 26, 1971, 2120260

Int. Cl. B22f *3/00*

U.S. Cl. 29—182.5 **5 Claims**

A friction material of the sintered bronze type containing, by weight, 4 to 15 percent of at least one element selected from the group consisting of titanium and a metal of Groups VI, VII and VIII of the Periodic System, 5 to 25 percent of a graphite-mixture consisting of 20 to 80 percent of an artificial graphite and the rest comprises a natural graphite, with the balance of the material being a metal compound selected from the group consisting of copper and a known bronze alloy different from a binary lead bronze. The artificial graphite preferably is electrographite, and the natural graphite preferably is lamellar graphite.

3,833,345

METHOD FOR INHIBITING THE FORMATION OF SLUDGE IN FUEL OILS

Shogo Tatsuke, Chiba; Osamu Yanagisawa, and Toshiaki Kaneko, both of Yokohama, all of Japan, assignors to Nippon Yusen Kaisha, Tokyo, Japan

Filed Dec. 28, 1970, Ser. No. 102,037

Claims priority, application Japan, May 2, 1970, 45/37199; Dec. 27, 1969, 44/104829

Int. Cl. C10l *1/20*

U.S. Cl. 44—63 **8 Claims**

Fuel oil is stabilized against sludge formation by means of an organic cationic quarternary ammonium bactericidal agent such as an alkyl pyridinium or picolinium halide.

3,833,346

ABRADING AID CONTAINING PARAFFIN AND AN INHIBITOR

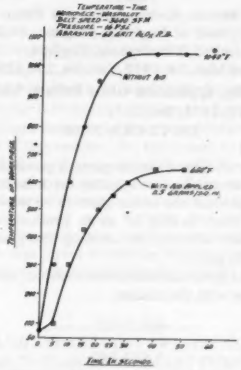
John J. C. Wirth, 98 Ponus Ave., Norwalk, Conn. 06850

Filed July 26, 1971, Ser. No. 166,093

Int. Cl. B24b *1/00;* **C10m** *3/06*

U.S. Cl. 51—306 **3 Claims**

A direct externally applied grinding, abrading and cutting aid for tools which includes a vehicle or carrier of a suitable matrix softer than the cutting material and which will readily adhere thereto without chipping while the tool is in motion. Dispersed within the matrix is a halogen salt or the like which includes hydrocarbons, chlorides, fluoborates, fluorides and various sulfides. These materials were selected on the basis that they sublime or decompose at temperatures below those that would metallurgically damage the metal workpiece. This



aid is applied directly to the tool, as for example, to a coated abrasive and may be reapplied as often as is necessary, thus increasing both the life of the tool, its cutting rate, total metal removal, and its efficiency in addition to lowering the temperature of the material being cut. In addition, there is disclosed an automated system for maintaining the workpiece at a selected temperature through the controlled application of the aid.

3,833,347

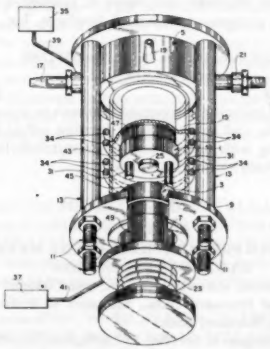
METHOD FOR MOLDING GLASS LENSES

Milton A. Angle; Gerald E. Blair, and Clarence C. Maier, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 93,351, Nov. 27, 1970, abandoned. This application Mar. 12, 1973, Ser. No. 340,139

Int. Cl. C03b *9/14*

U.S. Cl. 65—32 **27 Claims**



A method for molding glass into finished, image-forming lenses wherein a portion of optical glass is placed in a mold

cavity formed of a glasslike carbon material and subjected to heat and pressure. The walls defining the mold cavity have a high surface quality and a high surface accuracy, and the cavity is configured to produce lenses of predetermined shapes.

3,833,348

METHOD OF JOINING A PAIR OF SILICON NITRIDE PARTS

Roger Francis Stokes, Birmingham, and Brian John Hunt, Warwickshire, both of England, assignors to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Mar. 14, 1972, Ser. No. 234,620

Claims priority, application Great Britain, Mar. 24, 1971, 7874/71; May 21, 1971, 16452/71

Int. Cl. C03c *27/00*

U.S. Cl. 65—43 **5 Claims**

To join a pair of silicon nitride parts, a powdered glass containing silicon, aluminium, an alkaline earth metal and oxygen is provided on at least one of the parts to be joined. The powdered glass is then heated sc as to produce molten glass between the parts whereby, on cooling, the glass provides a joint between the parts.

The powdered glass can also contain silicon, manganese and oxygen, together with aluminium.

3,833,349

CERAMIC ARTICLES AND METHOD OF SEALING CERAMICS

Ronald H. Arendt, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 138,305, April 28, 1971, Pat. No. 3,719,550. This application Sept. 15, 1972, Ser. No. 289,430

Int. Cl. C03c *27/00*

U.S. Cl. 65—43 **9 Claims**

A method of forming a seal between high-density yttria bodies or between a high-density yttria body and a high-density alumina body is provided. The method involves placing an Al_2O_3-Ga_2O_3-Y_2O_3 mixture between the bodies to be sealed and heating the mixture to a temperature above the melting point of Ga_2O_3 and below the deformation temperature of the bodies such that an Al_2O_3-Ga_2O_3-Y_2O_3 seal forms between the bodies. Ceramic articles having a gas tight seal are made by the method.

3,833,350

METHOD OF INDUCING CAROTENOID ACCUMULATION IN PLANT TISSUE

Anson R. Cooke, Hatfield, and Nancy E. Gallagher, Oreland, both of Pa., assignors to Amchem Products, Inc., Ambler, Pa.

Filed Dec. 14, 1972, Ser. No. 315,760

Int. Cl. A01n *9/12*

U.S. Cl. 71—98 **22 Claims**

A method of inducing carotenoid synthesis or accumulation in plants, fruits, and vegetables by treating either before or after harvesting with halogenated phenoxytriethylamines or halogenated phenylthiotriethylamines.

3,833,351

CONTINUOUS PREPARATION OF PURE METALS BY HYDROGEN REDUCTION

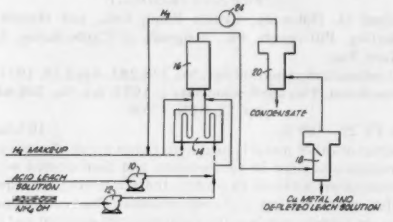
Daniel R. Neskora; Robert L. Brown, and Cedomir M. Sliepcevich, all of Norman, Okla., assignors to University Engineers, Inc., Norman, Okla.

Continuation-in-part of Ser. No. 332,679, Feb. 15, 1973,. This application July 20, 1973, Ser. No. 381,051

Int. Cl. C22b *23/04*

U.S. Cl. 75—0.5 A **27 Claims**

A process for continuously recovering metal powders of high purity from acid or ammoniacal leach solutions which comprises conditioning the leach solution to attain a selected free ammonia to metal mol ratio in the general range of from about 0.0:1 to about 6:1, depending upon the metal to be reduced, then continuously passing the conditioned leach solution through a tubular reactor under steady state conditions in modified plug flow in which localized, limited backmixing occurs, while continuously introducing a reducing



gas to the inlet end of the tubular reactor to agitate the pretreated leach solution as it passes through the reactor and to continuously reduce selected metal ions therein and yield insoluble metal powder. A temperature gradient is preferably maintained over the length of the tubular reactor, from ambient temperature at the inlet to the reactor, to a temperature preferably exceeding about 200°F at the outlet end of the reactor.

3,833,352

PROCESS FOR BENEFICIATING MOLYBDENATE CONCENTRATE TO PRODUCE MOLYBDENUM TRIOXIDE

Milos Vojkovic, Residence Azure, 78 Route d'Arlon, Grand Duchy, Luxembourg

Filed May 14, 1969, Ser. No. 824,682

Claims priority, application Great Britain, May 21, 1968, 24175/68

Int. Cl. C22b *1/02*; **C01g** *39/00*

U.S. Cl. 75—1 **12 Claims**

A process for the beneficiation of molybdenite concentrate comprising preheating the concentrate under inert conditions and contacting the concentrate with oxygen when the concentrate is at a temperature that will sustain an exothermic reaction with the oxygen to produce molybdenum trioxide, the conditions being such that the maximum temperature reached by the concentrate while it is in contact with the oxygen is within the range of from 500°C to 900°C.

3,833,353

PROCESS FOR CLASS VIIIB METALS ORE REDUCTION

Paul Franklin Taylor, P.O. Box 468, Crossville, Tenn. 38555

Continuation-in-part of Ser. No. 273,284, July 19, 1972, abandoned. This application Oct. 3, 1973, Ser. No. 403,261

Int. Cl. C21b

U.S. Cl. 75—21 **3 Claims**

The class VIIIB metals are generally found clustered and bound together within common ores, and most often include gold, silver, and copper. One such ore is of the Cobalt series comprised of the metals cobalt, nickel, silver, copper, and iron. Another one is of the Platinum series comprised of the metals platinum, nickel, copper, and iron. These are known respectively as Smaltite ore, and Pentlandite ore. Other platinum ore is found as alluvial deposits in regions of known noble metal-bearing formations such as the Ural Mountains, Colombia, and the Transvaal. They are sometimes referred to as "black sand" deposits and are mined by placer operations. This group includes platinum, palladium, rhodium, ruthenium, iridium, osmium, and usually with gold and silver. Much of it's

noble metal may be recovered by such means as by washing with water to produce particles and nuggets. However, much of this ore as well as all other of the types above mentioned are so bound with oxygen and gange material chemically that such simple recovery methods are rendered ineffective, and indeed, oftentimes requires definite chemical reactions for their reductions. Such material is usually the resultant "tailing" product from hydraulic concentration and benefication processes. Consequently huge amounts of such material cannot be so simply processed, as by washing, for the economic recovery of the bound-up metals. The instant process operates for the reduction of the metals within all such ores. The process requires such material to be in finely divided form and concentrated for economic advantage. It is then admixed with a certain liquid formula solution within a suitable reduction container, followed by additions of finely divided limestone and stirred for homogeneous uniformity while chemical reactions go to completion. The liquid formula is comprised of phosphoric acid, zinc oxide, and an alkylphenol polyglycol ether type sulfated surfactant. The mixture within the container is then heated by endothermic heat sources until the ore has reacted fully chemically with the liquid formula solution. Gases are expelled until the ore reaches a dry, solid state. The reduced matrix material is then pulverized for convenient entry into a smelting medium, and there smelted to produce the metals as either ingot of individual metals or in matte-alloyed forms. The smelting amounts to only a melting out of the metals from the matrix material, such metals being already chemically reduced and released by the foregoing reaction with the reduction components under heating. The smelted metal forms into either type according to selective heat applications to the smelting medium as the operator may choose. The combination of reduction ingredients are effective, therefore, in liberating the metals from chemically-bound oxygen and gange impurities upon admixing with the ore, heating the mixture, and smelting the resulting residue matrix material to the metals.

3,833,354

PROCESS FOR TRANSFORMING LIQUID FURNACE SLAG INTO GRANULES

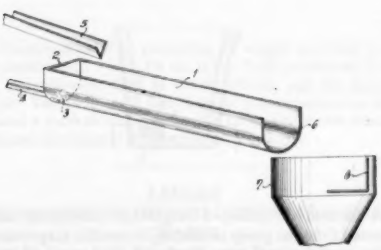
Ursus Thummler, Erftstadt Liblar; Hugo Werner, Hurth-Hermulheim, and Hans Kerber, Hurth-Knapsack, all of Germany, assignors to Knapsack Aktiengesellschaft, Knapsack near Cologne, Germany

Filed Nov. 16, 1972, Ser. No. 307,166

Claims priority, application Germany, Nov. 20, 1971, 2157653

Int. Cl. C21b *3/08*

U.S. Cl. 75—24 **1 Claim**



Liquid furnace slag, more particularly liquid phosphorus furnace slag, is transformed into granules. To this end, impinging contact between a free falling stream of liquid slag and a focused stream of water maintained under a pressure between 0.5 and 1.5 atmospheres gauge is produced so as to effect break-up of the slag into particles. The resulting particles are delivered to, and complete solidification thereof is effected in, a cooling zone having water therein.

3,833,355

PROCESS FOR THE REDUCTION, IN LIQUID PHASE, OF IRON ORE IN A ROTARY KILN

Aldo Ramacciotti, Rome, Italy, assignor to Centro Sperimentale Metallurgico S.P.A., Rome, Italy

Filed Jan. 18, 1972, Ser. No. 218,829

Claims priority, application Italy, Feb. 3, 1971, 48149/71

Int. Cl. C21b *1/06*

U.S. Cl. 75—40 **7 Claims**

Process for the production of liquid carburized iron by direct reduction in liquid phase, of iron-containing materials in an essentially cylindrical vertical reactor, rotating around its geometrical axis, wherein the material containing iron in oxidized state mixed with flux and the reducing material is fed while the reactor is in motion, in alternate layers, which owing to the centrifugal force or to their own friction, adhere to the internal wall of the reactor, the layer next to the reactor wall consisting of the reducing material and the adjacent layer, situated nearer the geometrical axis of the reactor consisting essentially of material containing iron in oxidized state mixed with a fluxing agent and wherein the carbon monoxide developed in the reduction reactions occurring between the hereinbefore said layers is entirely burnt to carbon dioxide by means of a jet of pure oxygen injected into the reactor.

3,833,356

METHOD AND APPARATUS FOR INJECTING OIL INTO THE TUYERES OF A BLAST FURNACE

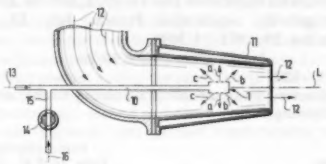
Friedrich August Karl Luth, Luegplatz 3, Dusseldorf-Oberkassel, Germany

Filed Oct. 21, 1971, Ser. No. 191,451

Claims priority, application Germany, Oct. 21, 1971, 2051676

Int. Cl. C21b *5/00*

U.S. Cl. 75—41 **9 Claims**



A method and an apparatus for injecting oil into the tuyeres of a blast furnace preferably if the substitution ratio is above 50 to 100 kg oil/ton of pig iron. The oil is injected into the blast current with a speed at which it is not atomized when leaving the nozzle but injected as coherent jets, preferably in radial direction, maintaining their coherence a substantial distance in front of the nozzle. In this way the combustion of the oil is improved and its utilization can be increased to far greater amounts of oil which can be economically injected into the blast furnace in substitution of coke.

3,833,357

A PROCESS FOR DECOMPOSING ALKALI METAL AMALGAMS INTO MERCURY, HYDROGEN AND ALKALI METAL HYDROXIDE SOLUTIONS

Giuseppe Bianchi, and Antonio E. Nidola, both of Milan, Italy, assignors to Oronzio De Nora Impianti Elettrochimici S.p.A., Milan, Italy

Division of Ser. No. 109,781, Jan. 26, 1971, Pat. No. 3,759,842. This application July 12, 1972, Ser. No. 271,055

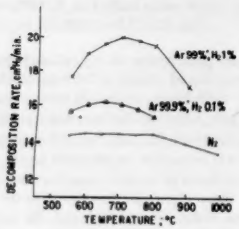
Claims priority, application Italy, Nov. 24, 1970, 32119/70

Int. Cl. C22b *43/100*; C01c *1/18*; C01b *1/00*

U.S. Cl. 75—121 **9 Claims**

Graphite impregnated with at least one valve metal oxide such as zirconium oxide, tantalum oxide, titanium oxide, alu-

minum oxide or molybdenum oxide alone or optionally co-deposited with an oxide of a metal of the eighth group of the periodic table which is useful in an amalgam denuder and a



process for the preparation and use of the said impregnated graphite to decompose an alkali metal amalgam to mercury and alkali metal hydroxide.

3,833,358

REFRACTORY IRON-BASE ALLOY RESISTING TO HIGH TEMPERATURES

Jean Bellot, Pompey, and Michel Hugo, Custines, both of France, assignors to Societe Des Acieries Du Manoir-Pompey, Paris, France

Continuation-in-part of Ser. No. 78,608, Oct. 6, 1970, abandoned. This application Jan. 19, 1972, Ser. No. 219,141

Claims priority, application France, July 22, 1970, 70.27119; Jan. 29, 1971, 71.3098

Int. Cl. C22c *39/22, 39/26*

U.S. Cl. 75—122 **7 Claims**

The refractory iron-base alloy according to the invention has the following composition:

	Percent by weight
Carbon	from 0.05 to 0.20
Nickel	from 30 to 40
Chromium	from 20 to 30
Columbium	from 0.2 to 2
Nitrogen	from 0.04 to 0.2
Manganese	from 0.6 to 2
Silicon	from 0.8 to 2
Iron and impurities	complementary percentage

Said alloy offers high resistance to creep, thermal shocks, heat fatigue and intergranular oxidation, as well as good weldability.

More specifically, the proportion of the various elements comply with the formula:

$$30 \times C\% + Ni\% + 0.5 \times Mn\% + 16 \times N\% = Cr\% + 0.5 \times (Nb + \tfrac{1}{2} Ta)\% + 3.5 \times Ti\% + 1.5 \times Si\% + Mo\% + 11 \pm 2.$$

3,833,359

HIGH CR LOW NI STAINLESS STEEL

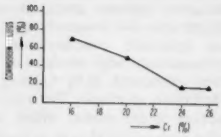
Shinichi Murakami, and Hisashi Hiraishi, both of Osaka, Japan, assignors to Kubota, Ltd., Osaka, Japan

Filed Aug. 13, 1973, Ser. No. 387,545

Int. Cl. C22c *39/54, 39/20*

U.S. Cl. 75—125 **2 Claims**

A high Cr low Ni stainless steel comprising not more than 0.10% C, not more than 2.0% Si, not more than 2.0% Mn, the sum of P and S being not more than 0.04%, 24 to 30% Cr, 2.0 to 3.0% Ni, 0.5 to 1.0% Mo, 0.03 to 0.10% Nb, 0.4 to 1.0% Cu and the remainder Fe and incidental impurities. This stainless



steel predominantly exhibits the ferrite matrix and is quite resistant to the intergranular corrosion and the stress corrosion cracking.

3,833,360

SUPER-HIGH-SPEED STEELS OF HIGH CUTTING CAPACITY

Henrik Giflo; Sandor Enekes; Pal Zambo; Janos Sziklavari; Istvan Farkas; Geza Ivan; Jozsef Molnar; Jozsef Vamosi, and Janos Valko, all of Miskolc, Hungary, assignors to Lenin Kohaszati Muvek, Miskolc, Hungary

Filed Dec. 29, 1972, Ser. No. 319,857

Claims priority, application Hungary, Dec. 29, 1971, 165

Int. Cl. C22c *39/14*

U.S. Cl. 75—126 R **6 Claims**

Mo-based super-high-speed steel of high cutting capacity, containing, in addition to the iron and the usual alloying and contaminating elements, also 1.05 to 1.50 weight percent of C, 4.0 to 5.0 weight percent of Cr, 5 to 6 weight percent of W, 0.05 to 2.0 weight percent of S, 0.05 to 0.50 weight percent of Pb and optionally being alloyed with Co, improved in that it contains 6.05 to 6.95 weight per cent of Mo, 2.16 to 4.50 weight percent of V, 0.10 to 4.0 weight percent of Nb and 0.11 to 0.25 weight percent of N_2.

3,833,361

METHOD FOR ADDING SPECIAL ELEMENTS TO MOLTEN PIG IRON

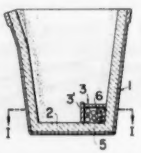
Toshihisa Kusaka, Tokyo, Japan, assignor to Kusaka Rare Metal Products Co., Ltd., Tokyo, Japan

Filed Feb. 9, 1971, Ser. No. 113,853

Claims priority, application Japan, July 16, 1970, 45-61993; Nov. 9, 1970, 45-97825

Int. Cl. C22c *37/00*

U.S. Cl. 75—130 B **7 Claims**



A method of adding a magnesium containing additive selected from the group consisting of metallic magnesium and alloys or mixtures of magnesium with at least one other metal selected from the group consisting of rare earth metals, calcium, aluminum, vanadium, zirconium, niobium, titanium, copper, nickel, chromium, molybdenum, cobalt and mixtures thereof, which comprises introducing said magnesium containing additive to at least one enclosure at the bottom of a molten pig iron ladle, covering said additive with a granular or powdered covering layer containing at least one material selected from the group consisting of carbon, silicon carbide

and silicon, whereby the melting point of said covering layer is adjusted to between 1,100° and 1,600° C. and thereafter pouring the molten pig iron into said layer over said enclosure so that contact between said molten pig iron and said additive is delayed until at least a portion of the covering layer is melted.

3,833,362

ELECTROCONDUCTIVE SOLDER

Dennis S. Postupack, Lower Burrell, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 73,619, Sept. 18, 1970, Pat. No. 3,734,698. This application Feb. 20, 1973, Ser. No. 333,593
Int. Cl. C22c *11/00, 31/00*
U.S. Cl. 75—134 T **2 Claims**

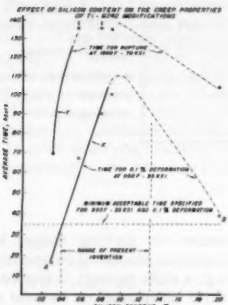
A tin-free alloy for use in making an electrical solder connection between a tinned copper wire and a ceramic silver conductive stripe on a glass substrate. The solder connection is useful in electroconductive windows, particularly laminated windows fabricated at a temperature range up to about 300°F.

3,833,363

TITANIUM-BASE ALLOY AND METHOD OF IMPROVING CREEP PROPERTIES

Howard B. Bomberger, Jr., Canfield, and Stanley R. Seagle, Warren, both of Ohio, assignors to RMI Company, Niles, Ohio

Filed Apr. 5, 1972, Ser. No. 241,286
Int. Cl. C22c *15/00*
U.S. Cl. 75—175.5 **6 Claims**



A titanium-base alloy consisting by weight of about 5.5 to 6.5% aluminum, 1.7 to 2.3% tin, 0.7 to 5.0% zirconium, 0.7 to 3.0% molybdenum, 0.04 to 0.13% silicon, and the balance titanium. The addition of silicon to the otherwise known alloy produces a marked improvement in creep properties without significant detrimental effect to other properties.

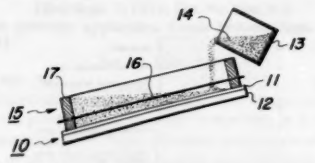
3,833,364

METHOD OF DEVELOPING ELECTROSTATIC IMAGE CHARGE

Masamichi Sato; Isoji Takahashi, and Honjo Satoru, all of Asaka, Japan, assignors to Xerox Corporation, Rochester, N.Y.

Continuation of Ser. No. 776,835, Nov. 18, 1968, abandoned. This application July 21, 1970, Ser. No. 64,032
Int. Cl. G03g *13/08*
U.S. Cl. 96—1 SD **6 Claims**

A novel development system is disclosed to be used in conjunction with an electrophotographic imaging process. A developer composition comprising a toner, carrier and an electrodeforming material is used with a development electrode in order to enhance the development phase of the electrophotographic imaging process.



3,833,365

ELECTROSTATIC POWER COATING METHOD COMBINED WITH AN ELECTROPHOTOGRAPHIC PROCESS

Kunio Hiwano; Masaki Fukagawa, both of Hiroshima; Saturu Honjo, Asaka; Masakazu Iwasa, Asaka, and Seiji Matsumoto, Asaka, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa and Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, both of, Japan

Filed June 30, 1972, Ser. No. 267,757
Int. Cl. G03g *13/08*
U.S. Cl. 96—1 SD **8 Claims**

An electrostatic powder coating method comprising;
exposing a charged photoconductive toner layer formed on an electrically conductive substrate to an optical image; selectively removing the irradiation discharged toner particles from said toner layer at irradiated areas to form a toner image corresponding to said optical image; and then, while the remaining charged toner layer still retains a sufficient amount of charge, electrostatically spraying a second powder having the same charge polarity as that of said toner layer over the toner image bearing surface, whereby said second powder is preferentially deposited on the irradiated areas of said image bearing surface, is disclosed.

3,833,366

CARRIER COMPOSITIONS

Robert William Madrid, Macedon, and Robert Joseph Hagenbach, Rochester, both of N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Continuation of Ser. No. 814,437, April 8, 1969, abandoned. This application Nov. 17, 1972, Ser. No. 307,748
Int. Cl. G03g *9/02, 13/08*
U.S. Cl. 96—1 SD **6 Claims**

A carrier for electrostatographic developer mixtures is provided comprising a core surrounded by a pre-coated partially cured thin film of a silicone, over-coated with an unsaturated polyester, said silicone chemically coupling said polyester to said core upon curing.

3,833,367

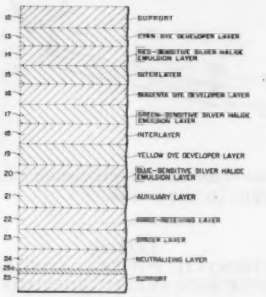
NOVEL PHOTOGRAPHIC PRODUCTS AND PROCESSES

Howard C. Haas, Arlington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed May 3, 1972, Ser. No. 249,849
Int. Cl. G03c *7/00, 5/54, 1/40, 1/78*
U.S. Cl. 96—3 **30 Claims**

Novel photograhpic products for use in diffusion transfer systems for forming visible images, particularly systems for forming color images viewable, without separation as color reflection prints, which products include a neutralizing layer for lowering the environmental pH after application of an

aqueous alkaline processing fluid, the neutralizing layer being prepared by coating an aqueous solution of a water-soluble cross-linkable acidic polymer on a layer of the film unit including a non-diffusible cross-linking agent for the acidic polymer, whereby to cross-link and thereby harden the thus



applied layer of acidic polymer at least at the interface of the respective layers. The non-diffusible cross-linking agent may be the only component of the layer or substrate on which the neutralizing layer is applied or it may be present along with other materials, e.g., as the major component of the substrate.

3,833,368

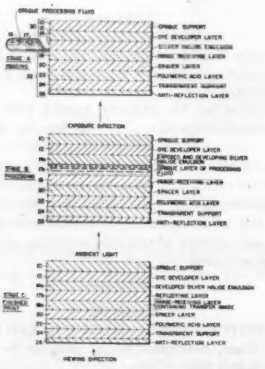
PHOTOGRAPHIC PRODUCTS INCORPORATING ANTI-REFLECTION COATINGS

Edwin H. Land, Cambridge, and Stanley M. Bloom, Waban, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 4, 1972, Ser. No. 311,831

Int. Cl. G03c *7/00, 5/54, 1/76, 1/48, 1/40, 1/84, 1/78;* **B41m** *1/18*

U.S. Cl. 96—3 **60 Claims**



Photographic images, particularly multicolor images, viewed through a transparent support have an anti-reflection coating on the outer surface of said support. The anti-reflection coating comprises an eighth-wave layer of silica and an eighth-wave layer of a fluorinated polymer. The images may be formed by multicolor diffusion transfer processes using dye developers or other image dye-providing materials. In the preferred embodiments, the photographic image is an integral negative-positive reflection print. Where photoexposure is effected through a transparent support, e.g., the transparent support through which the final image is viewed, provision of an anti-reflection coating and effecting photoexposure therethrough will permit more effective recording of light passing through the camera lens. The transparent support preferably has an index of refraction of at least 1.6.

3,833,369

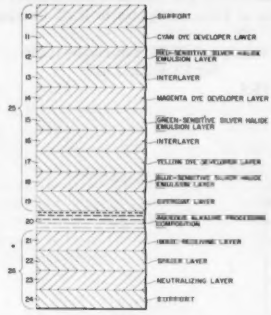
COLOR DIFFUSION TRANSFER FILMS AND PROCESSES WITH POLYMER ENCAPSULATED REFLECTING AGENTS

Charles K. Chiklis, Lexington, and Paul D. Lubin, Hudson, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 29, 1972, Ser. No. 319,291

Int. Cl. G03c *7/00, 5/54, 1/40, 1/84*

U.S. Cl. 96—3 **21 Claims**



Photographic systems for forming images by diffusion transfer wherein an aqueous processing composition including a reflecting agent, e.g., a white pigment, is applied between an exposed photosensitive component or element including at least one light-sensitive layer and an image-receiving component to develop the exposed photosensitive component and, as a function of development, to form a transfer image on the image-receiving component which, due to the presence of the thus applied reflecting agent, is viewable without separation as a reflection print, the essence of the invention being "encapsulating" the reflecting agent in a polymeric "skin" or wall to obtain stated beneficial results; and aqueous compositions including such encapsulated reflecting agents.

3,833,370

COLOR DIFFUSION TRANSFER WITH DEVELOPMENT CONTROLLING POLYMERIC SALT

Ronald A. Sahatjian, Bedford, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 5, 1973, Ser. No. 321,289

Int. Cl. G03c *7/00, 5/54, 1/40, 1/06, 1/34*

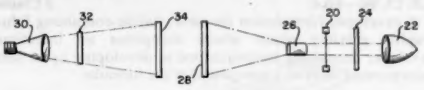
U.S. Cl. 96—3 **46 Claims**

Color diffusion transfer processes are carried out in the presence of a salt whose anion is derived from an immobile polymeric acid and whose cation is derived from a reagent adapted to control the development of silver halide.

3,833,371
FILM ANNOTATION METHOD

Charles R. Gray, 3104 Ramblewood Dr., District Heights, Md. 20028, and DeForest D. Choha, 7809 Dassett Ct., Annandale, Va. 22003

Filed June 25, 1973, Ser. No. 373,324
Int. Cl. G03b *17/24*
U.S. Cl. 95—1.1 **5 Claims**



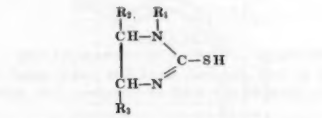
A device to add additional information to previously processed photographic film. A layer of a Diazo emulsion is adhered onto one surface of the film which is then imaged onto a gloss screen where the desired annotations are made. An ultra-violet lamp then illuminates the annotations which are optically focussed back onto the Diazo emulsion. Given sufficient exposure the Diazo emulsion forms a latent image which is processed using gaseous ammonia.

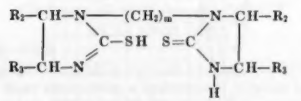
3,833,372
VISCOUS DEVELOPING LIQUID FOR USE IN A SILVER SALT DIFFUSION TRANSFER PROCESS

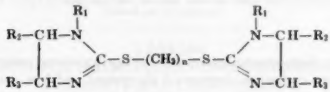
Katsumi Hayashi; Reiichi Ohi, and Tadao Shishido, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 9, 1972, Ser. No. 305,027
Claims priority, application Japan, Nov. 9, 1971, 46-89267
Int. Cl. G03c *5/54*
U.S. Cl. 96—29 R **33 Claims**

A silver halide-containing viscous developing liquid to be used in a diffusion transfer process comprising an hydroxylamine type developing agent, a sulfur-free nitrogen-containing silver halide solvent, a cellulose derivative thickener, an alkali agent and a color modifying or toning agent of at least one compound represented by the following formulae (I), (II) and (III):


(I)


(II)


(III)

(wherein R_1, R_2 and R_3 are a hydrogen atom, an alkyl or substituted alkyl group containing 1–4 carbon atoms, or a phenyl group, m is an integer of 2–4, and n is 0 or an integer of 1–4).

3,833,373
PHOTOGRAPHIC PROCESS FOR THE PRODUCTION OF COLLOID RELIEF PATTERNS

Edwin Hendrik Hazenbosch, Mechelen, and Albert Lucien Poot, Kontich, both of Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

Filed Sept. 7, 1972, Ser. No. 286,935
Claims priority, application Great Britain, Sept. 8, 1971, 41941/71
Int. Cl. G03c *5/00*
U.S. Cl. 96—35 **12 Claims**

A photographic process wherein a relief image is formed by means of a photographic material comprising in a recording layer a photosensitive dispersed phase in the form of discrete particles of an intimate mixture of N-vinylcarbazole and carbon tetrabromide in a hardenable hydrophilic colloid medium. The process includes a negative and a positive working mode. Unhardened colloid portions are removed by wash-off. Gelatin is used preferably as hardenable colloid.

3,833,374
COLORING OF ANODIZED ALUMINUM

Elbert L. Patrick, East Cleveland, Ohio, assignor to Metalphoto Corporation, a Division of Horizons Research Incorporated, Cleveland, Ohio

Continuation-in-part of Ser. No. 54,842, July 14, 1970, abandoned. This application Oct. 5, 1972, Ser. No. 295,397
Int. Cl. G03c *5/00*
U.S. Cl. 96—36 **4 Claims**

Coloring of anodized aluminum using a resist which includes a dye which can be absorbed by the anodized layer.

3,833,375
METHOD OF REPAIRING AN IMPERFECT PATTERN OF METALIZED PORTIONS ON A SUBSTRATE

John Joseph Moscony, Lancaster, and Ronald Lester Kennard, Landisville, both of Pa., assignors to RCA Corporation, New York, N.Y.

Filed Mar. 9, 1972, Ser. No. 233,247
Int. Cl. G03c *5/00*
U.S. Cl. 96—36.2 **5 Claims**

The method comprises treating a pattern of metalized portions on a substrate which were deposited using a photomasking technique, to render the metal thereon more etch-resistant, then sensitizing and activating at least a part of the treated area on the substrate including an area containing imperfectly formed metalized portions, for autocatalytic deposition of more of the metal, depositing a coating of the metal over the treated area by autocatalytic deposition, defining the portions to be repaired by photomasking and etching techniques preferably using the same mask used to define the original pattern of metalized portions, and etching away unwanted portions of the last-deposited metal without removing any substantial amount of the first-deposited metal portions.

3,833,376
COLOR DEVELOPMENT PROCESS AND COMPOSITIONS

Norman Newman; Richard S. Fisch, both of St. Paul, Minn., and Enrico Furlanetto, Savona, Italy, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 24, 1972, Ser. No. 309,116
Int. Cl. G03c *7/00, 5/32*
U.S. Cl. 96—55 **8 Claims**

An abbreviated process for the color development of photographic elements containing an aldehyde, the heating the element in an elevated temperature environment of at least 65°C. in the presence of certain gelatin permeable compounds until full color density is attained without degradation of the photographic element. Such gelatin permeable compounds incoude aromatic alcohols, their esters and ethers, alkylene glycols

having at least 3 carbon atoms per molecule and surface active compounds. These gelatin permeable compounds may be included in any processing bath after the color developer.

3,833,377

PROCESS FOR PREPARING GRANULAR COLOR DEVELOPING AGENT

Takeo Emoto, and Satoshi Kurihara, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 18, 1972, Ser. No. 281,672
Claims priority, application Japan, Aug. 19, 1971, 46-63231
Int. Cl. G03c *5/30, 7/16*
U.S. Cl. 96—66.2 **5 Claims**

A process for preparing a granular color developing agent, which comprises kneading a mixture of at least one excipient selected from the group consisting of water and lower alcohols and a p-phenylenediamine color developing agent, and granulating the mixture is disclosed.

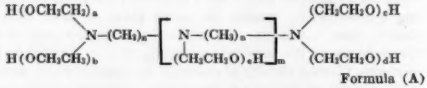
3,833,378

DEVELOPER COMPOSITION FOR PRODUCING PHOTOGRAPHIC MATERIALS FOR THE GRAPHIC ARTS

Katsumi Hayashi; Yoo Iijima, and Teruo Kobayashi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

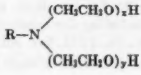
Filed Apr. 27, 1972, Ser. No. 248,275
Claims priority, application Japan, Apr. 27, 1971, 46-27816
Int. Cl. G03c *5/30*
U.S. Cl. 96—66.3 **20 Claims**

A developer composition for producing photographic materials for the graphic arts comprising a dihydroxy benzene developing agent and at least one polyethoxy amino compound represented by the following formula A



Formula (A)

wherein n ranges from 2 to 10;
m ranges from 0 to 6; and $a+b+c+d+e\times m$ ranges from 5 to 200 with a, b, c, d and e each representing an integer other than 0.
or the formula B



Formula (B)

wherein R represents an alkyl group of less than four carbon atoms, where C_4 $x\times y$ ranges from 3 to 100 or R represents a $-(CH_2CH_2O)_xH$ group, where $x+y+z$ ranges from 5 to 100, in which x, y and z each represent an integer other than 0 is disclosed.

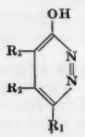
3,833,379

DEVELOPER COMPOSITION FOR LITHOGRAPHIC PRINTING PLATES

Yugoro Sakazume; Akio Oshima; Kunio Jin; Masashi Nakano, and Takashi Uchida, all of Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jan. 11, 1973, Ser. No. 322,875
Claims priority, application Japan, Jan. 17, 1972, 47-6166
Int. Cl. G03c *5/30*
U.S. Cl. 96—66.4 **2 Claims**

A developer formulation for silver halide-containing lithographic printing plates which comprises an infectious developer containing hydroquinone as developing agent and, incorporated therein, a compound of the formula:



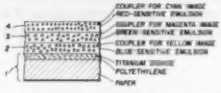
wherein R_1 is a hydrogen atom, an alkyl group, a hydroxy group or a carboxy group; R_2 is a hydrogen atom, an alkyl group, a halogen atom, or a carboxyalkyl group; and R_3 is a hydrogen atom, a cyano group, a halogen atom or a carboxy group, provided that R_2 and R_3 may bond together to form a benzene ring.

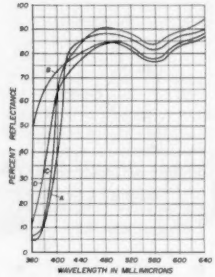
3,833,380

NOVEL PHOTOGRAPHIC ELEMENTS

Irvin H. Crawford, and Francis M. Hartman, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 447,373, April 12, 1965, abandoned. This application Sept. 26, 1972, Ser. No. 292,365
Int. Cl. G03c *1/84, 1/76*
U.S. Cl. 96—74 **18 Claims**



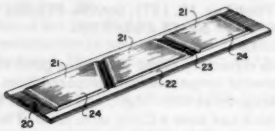


Color photographic elements having improved resistance to ultraviolet radiation, improved sharpness and low propensity to stain in the non-image areas comprise a paper support having coated thereon a silver halide emulsion layer which is sensitive to a visible region of the spectrum, which contains an incorporated color forming coupler. The paper support contains a non-fluorescing ultraviolet radiation absorbing compound and has, on its emulsion side surface, an average reflectance of no more than about 25 percent over wavelengths in the ultraviolet region of the spectrum in the range of about 360 to about 400 mμ.

3,833,381
PHOTOGRAPHIC PRODUCTS INCLUDING RUPTURABLE CONTAINERS

Richard J. Chen, Winchester, and Thomas P. McCole, South Natick, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Oct. 25, 1972, Ser. No. 300,709
Int. Cl. G03c *1/48*
U.S. Cl. 96—76 C **13 Claims**



Single use rupturable containers or "pods" are disclosed for use in diffusion transfer film units. These pods are particularly adapted for use in film units providing integral negative-positive multicolor reflection prints. The rupturable containers have a plurality of fluid-retaining compartments, and the end compartments have a trapezoidal configuration effective in assisting the uniform distribution of processing fluid released by rupture of the pod.

3,833,382
PHOTOGRAPHIC PRODUCTS INCLUDING RUPTURABLE CONTAINERS

Edwin H. Land, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 29, 1972, Ser. No. 319,488
Int. Cl. G03c *1/48*
U.S. Cl. 96—76 C **14 Claims**

Single use rupturable containers or "pods" are disclosed for use in diffusion transfer film units. These pods are particularly adapted for service in film units providing integral negative-positive multicolor reflection prints. The container walls enclosing each fluid retaining cavity are secured together at a plurality of locations within said cavity to assist in the uniform distribution of processing fluid released upon rupture of the pod.

3,833,383
HOLOGRAPHIC RECORDING MEDIUM

Robert James Ryan, and Louis Anthony, both of Di Marco, Trenton, N.J., assignors to RCA Corporation, New York, N.Y.

Filed Aug. 18, 1972, Ser. No. 282,077
Int. Cl. G03c *1/84*
U.S. Cl. 96—84 R **4 Claims**

A holographic recording medium having a non-blocking antihalation layer comprising a hydrophilic polymer having unreacted vinyl alcohol groups and an antihalation dyestuff.

3,833,384
PHOTOPOLYMERIZABLE COMPOSITIONS AND ELEMENTS AND USES THEREOF

John M. Noonan; Richard C. Sutton, and Robert C. McConkey, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 247,747, April 26, 1972. This application Apr. 6, 1973, Ser. No. 348,578
Int. Cl. G03c *1/68*
U.S. Cl. 96—115 P **17 Claims**

Novel photopolymerizable compositions comprise an ethylenically unsaturated monomer which is a bisacryloyl derivative of p- or m-hydroxy or amino benzoic acid, a film-forming carboxylated polymeric binder and a photoactivatable polymerization initiator. These compositions are easily developed with alkaline solutions and can be used to prepare resists, printing plates, and other photomechanical images. Terpolymer binders of methyl methacrylate, ethyl acrylate and methacrylic acid present in proportions of from 40 to 65 percent, 20 to 45 percent and 10 to 25 percent, respectively, on a mole basis, have been found to produce resist compositions of exceptionally clean developing characteristics which are substantially free of microresidues.

3,833,385
PREFORM CORE BODIES

Lee M. Adelsberg, Big Flats; Michael C. Carson, Corning; Ray B. Forker, Jr., Beaver Dams, and Hermann L. Rittler, Horseheads, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Dec. 28, 1971, Ser. No. 213,223
Int. Cl. B28b *7/34*
U.S. Cl. 106—38.9 **2 Claims**

This invention relates to the production of preform core materials which are sufficiently refractory to withstand exposure to temperatures up to and in excess of 1,600°C. and which are relatively inert to such molten metals as nickel and cobalt base superalloys. These core materials are characterized as containing pollucite (Cs_2O-Al_2O_3-$4SiO_2$) and/or mullite ($3Al_2O_3$-$2SiO_2$).

3,833,386
METHOD OF PREPAIRING POROUS CERAMIC STRUCTURES BY FIRING A POLYURETHANE FOAM THAT IS IMPREGNATED WITH INORGANIC MATERIAL

Louis L. Wood, Potomac, Md.; Philip Messina, Colonia, N.J., and Kurt C. Frisch, Grosse Ile, Mich., assignors to W. R. Grace & Co., New York, N.Y.

Filed July 7, 1972, Ser. No. 269,626
Int. Cl. B29d *27/08*; C08j *1/14*
U.S. Cl. 106—41 **17 Claims**

The invention disclosed is for ceramic foam structures prepared by reacting an isocyanate capped polyoxyethylene polyol reactant with large amounts of an aqueous reactant containing finely divided sinterable ceramic material. The resultant foams having the sinterable ceramic material dispersed thereon are heat treated to decompose the carrier foam under firing conditions which sinter the ceramic particles resulting in a rigid ceramic foam structure.

3,833,387
CERAMIC COATING OF HIGH THERMAL EXPANSION COEFFICIENT FOR THERMOELECTRIC MATERIALS

Edward L. Reed, Woodland Hills, and Irwin J. Groce, Canoga Park, both of Calif., assignors to North American Rockwell Corporation, El Segundo, Calif.

Division of Ser. No. 562,948, June 30, 1966. This application Feb. 2, 1968, Ser. No. 790,178
Int. Cl. C03c *5/02*
U.S. Cl. 106—49 **5 Claims**

1. A protective coating composition for a thermoelectric material consisting essentially of a metal oxide dispersed in an enamel matrix:

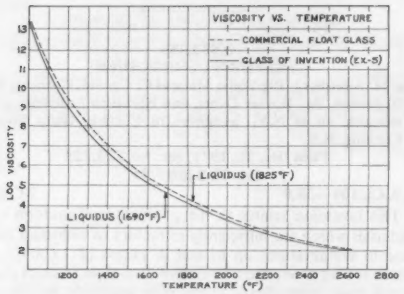
a. the metal oxide having a thermal expansion coefficient of at least about 10 in./in./°C(x 10^{-6}), and

b. the enamel matrix containing as essential components lead oxide, silica, lithium oxide, and at least one other alkali metal oxide selected from the group consisting of sodium oxide and potassium oxide.

3,833,388
METHOD OF MANUFACTURING SHEET AND FLOAT GLASS AT HIGH PRODUCTION RATES

Stanley M. Ohlberg, and James V. Jones, both of Pittsburgh, Pa., assignors to PPG Industries Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 275,127, July 26, 1972, abandoned. This application Apr. 3, 1973, Ser. No. 347,510
Int. Cl. C03b *1/00*
U.S. Cl. 106—52 **18 Claims**



A method of increasing the rate of production (throughput) of flat glass, particularly sheet glass manufactured by the Pittsburgh Process, and float glass manufactured by the Float Process is disclosed. The method involves altering the standard commercial sheet glass formulations of the Pittsburgh Process and of the Float Process to give a lower SiO_2 and CaO containing glass which has a higher Na_2O content. The new glass composition melts and fines at lower temperatures and is a surprisingly more soluble composition for the batch sand which makes the glass composition faster melting. The new glass requires less salt cake for melting and fining than conventional sheet and float glass and also retains a higher percentage of SO_3 during melting and refining in the glass than either conventional sheet and float glass. These factors significantly reduce the pollution hazards associated with gaseous and particulate sulfur emissions. Further, since the glass is faster melting, it helps reduce particulate emissions due to dusting. Further, the new glass has a lower liquidus temperature, a wider working range, can be attenuated over a wider temperature range, and is easier to cut. Flat glass articles of the new composition can be both thermally and chemically tempered at faster rates. These improved properties all contribute to high throughput conditions. Although the new glass can be made at higher production rates, commercially desirable properties, such as chemical durability, are as good as commercially available sheet and float glass.

3,833,389
HEAT RESISTANT AND STRENGTHENED COMPOSITE MATERIALS AND METHOD FOR PRODUCING SAME

Katsutoshi Komeya, Kawasaki; Akihiko Tsuge, Yokohama; Hiroshi Inque, Kawaguchi, and Hiroyuki Murata, Yokohama, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawask-shi, Japan

Filed Dec. 23, 1971, Ser. No. 211,728
Claims priority, application Japan, Dec. 23, 1970, 45-115817
Int. Cl. C04b *35/52, 35/56, 35/58*
U.S. Cl. 106—55 **4 Claims**

Heat resistant and strengthened composite materials are obtained by mixing, and sintering in a non-oxidizing atmosphere, the combination of powders of aluminum nitride and/or silicon nitride, with powders of an oxide of lanthanum, cerium, scandium, yttrium, and/or yttrium aluminum garnet, and with powders or whiskers of silicon carbide, boron nitride and/or carbon. The composite material so produced is characterized by high shock resistance and excellent mechanical strength.

3,833,390
DEVELOPMENT OF HOT STRENGTH IN SYNTHETIC MAGNESIA REFRACTORIES HAVING HIGH B_2O_3 CONTENT

Ronald Staut, Cherry Hill, N.J., and Gunther L. Mortl, Villach, Austria, assignors to General Refractories Company, Philadelphia, Pa.

Filed Aug. 19, 1971, Ser. No. 173,302
Int. Cl. C04b *35/04*
U.S. Cl. 106—58 **7 Claims**

A magnesia refractory shape possessing good strength properties at elevated temperatures is prepared from a magnesia grain containing 90 to 99% MgO, and over 0.1% by weight B_2O_3; and which can have a Ca-Si mole ratio of less than 2.0. Fine particles of an alkali metal-containing compound are added to the magnesia grain to help volatilize the boron during firing. Fine particles of calcium-and silicon-containing material can be admixed, if needed, with the magnesia grain to increase the Ca-Si mole ratio of the fine (−100 mesh) particles of the admixture to above 2:1 and to increase the total weight percent of CaO and SiO_2 present in the fine particle component of the composition to between 3 to 7% by weight.

3,833,391
REFRACTORY COMPOSITION, METHOD OF MAKING, AND PRODUCT

Alfred P. Dreyling, deceased, late of East Brunswick, N.J. (by Lewis J. Dreyling, executor), assignor to Quigley Company, Inc., New York, N.Y.

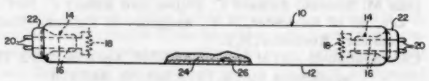
Continuation-in-part of Ser. No. 120,756, March 3, 1971, abandoned, which is a continuation-in-part of Ser. No. 828,338, May 27, 1969, abandoned. This application July 17, 1973, Ser. No. 379,973
Int. Cl. C04b *35/04*
U.S. Cl. 106—58 **11 Claims**

Basic refractory particles are mixed with an ammonium salt binder capable of imparting high green strength and subsequently passing out of the refractory mixture by sublimation or by decomposition and volatilization. The mixture is formed to a predetermined shape and fired to leave the original basic refractory in said given shape and substantially free of binder that would reduce refractoriness. The refractory mixture may be made by forming the binder salt directly on the surface of the refractory particles.

3,833,392
COATING COMPOSITION AND METHOD FOR PREPARING WATER-SOLUBLE CELLULOSIC POLYMER COATING COMPOSITIONS FOR COATING FLUORESCENT TUBES

Robert W. Repsher, Butler; Gordon C. Gainer, Pittsburgh; Russell M. Luck, Monroeville, and David H. Davies, Pittsburgh, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 9, 1971, Ser. No. 170,018
Int. Cl. C08b *27/04*
U.S. Cl. 106—193 **6 Claims**



Method of preparing suspension for coating discharge devices with finely divided particulate material, wherein an

aqueous solution of a hydroxy alkyl cellulose is initially purified by passing the solution through an ion exchange system, and the particulate material to be coated is thereafter suspended in the purified solution. The resulting coating composition has an extremely low level of impurity material which, if present, could impair the performance of the completed discharge device, after combustion.

3,833,393

FABRIC-STIFFENING COMPOSITION AND PROCESS

Thomas V. Kandathil, Racine, Wis., assignor to S. C. Johnson & Son, Inc., Racine, Wis.

Continuation of Ser. No. 88,130, Nov. 9, 1970, abandoned, which is a continuation-in-part of Ser. No. 721,191, April 15, 1968, abandoned. This application Oct. 2, 1972, Ser. No. 294,040

Int. Cl. C08b *27/36, 27/42, 25/00, 27/46*

U.S. Cl. 106—212 **4 Claims**

The disclosure relates to fabric-stiffening compositions comprising a fabric-stiffening agent (such as starch), an organic solvent with high penetrating ability, and an emulsifiable wax. These compositions may also contain additional components, such as a water-soluble polyalkylene glycol, a salt of a water-soluble amine and a fatty acid, or a silicone. These compositions can also be pressurized.

3,833,394

ZINC SULPHIDE PIGMENTS

David William Harold Clark, Leigh-on-Sea, England, assignor to May R. Baker Limited, Dagenham, Essex, England

Filed Apr. 24, 1972, Ser. No. 246,762

Claims priority, application Great Britain, Apr. 28, 1971, 11907/71

Int. Cl. C09c *1/04*

U.S. Cl. 106—293 **25 Claims**

A process for increasing the refractive index of planar particles of a zinc orthophosphate is provided which comprises depositing on the particles zinc sulphide formed in situ by heating an aqueous solution of a water-soluble zinc salt and a water-soluble thiosulphate. The resulting pigments have an enhanced pearly or sparkly appearance.

3,833,395

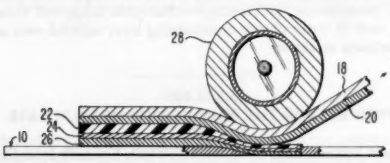
CONTINUOUS FORM COMPUTER PRINT-OUT DOCUMENT PROTECTION SYSTEM

Earl J. Gosnell, Rochester, N.Y., assignor to Burroughs Corporation, Detroit, Mich.

Filed Sept. 11, 1972, Ser. No. 287,837

Int. Cl. B41m *5/10*

U.S. Cl. 117—1 **7 Claims**



A method of safeguarding the amount and/or signature of negotiable instruments such as a check or similar document from fraudulent alternation or forgery by providing a pressure transfer coating for application to the document to be protected during amount printing and/or signing thereof comprising a pressure sensitive tape having a release coating, a polyester or acrylic coating including fluorescent, colorless pigment and an amorphous silica, and a strata having a design with a brilliantly colored daylight fluorescent ink and a waxy-type coating thereon. The latter three strata are pressure released from the tape and transferred to the document over the amount or signature area to be protected, and then heated so as to cause penetration of the wax-like layer and deeper penetration of the amount indicia into the document fibers.

3,833,396

PATTERN DELINEATION METHOD AND PRODUCT SO PRODUCED

Guenther Wilhelm Kammlott, Watchung, and William Robert Sinclair, Summit, both of N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed May 9, 1973, Ser. No. 358,729

Int. Cl. G03c *5/00*

U.S. Cl. 117—8.5 **8 Claims**

A process for the fabrication of a supported iron oxide pattern involves selective electron irradiation of a blank. The blank consists of a layer of iron oxide which is soluble, for example, in an acidic media. Irradiation results in insolubilization so that delineation is accomplished by immersing the processed blank in a suitable solvent.

3,833,397

PROCESS FOR THE RESIN FINISHING OF CELLULOSIC FABRICS AND CELLULOSIC BLEND FABRICS WITH SIMULTANEOUS IMPROVEMENT OF THEIR AFFINITY FOR OPTICAL BRIGHTENERS

Kurt Poppenwimmer, Allschwil/Basel-Land, and Hilmar Roedel, Therwil/Basel-Land, both of Switzerland, assignors to Sandoz Ltd., Basle, Switzerland

Filed June 30, 1971, Ser. No. 158,518

Claims priority, application Switzerland, July 10, 1970, 10452/70

Int. Cl. C09j *3/00*; **D06m** *13/34*

U.S. Cl. 117—33.5 T **11 Claims**

A process for the resin finishing of cellulosic blend fabrics with improvement of their affinity for anionic optical brighteners by treating the fabrics with a solution of a) an N-methylol or N-alkoxymethyl compound b) an acid curing catalyst c) a copolymer consisting of vinyl pyrrolidone units and at least 5.5 weight percent vinyl alcohol units and curing by dry heat treatment at 120°–180°C.

3,833,398

METHOD OF PROVIDING AN ADHERENT PHOSPHOR COATING ON A FLUORESCENT LAMP

Willy P. Schreurs, Danvers, Mass., assignor to GTE Sylvania Incorporated, Danvers, Mass.

Filed May 3, 1973, Ser. No. 356,735

Int. Cl. B44d *1/02*

U.S. Cl. 117—33.5 L **4 Claims**

In a method of coating fluorescent lamp glass envelopes to provide improved adhesion of phosphor and alumina particles, conditioning the phosphor and aluminium oxide particles in a solution of ammonium lignosulfonate, removing the particles from the solution, washing, providing an aqueous suspension containing the conditioned particles and an organic binder and applying the particles to the glass envelope to provide a coating.

3,833,399

SURFACE TREATMENT OF FLUORESCENT LAMP BULBS AND OTHER GLASS OBJECTS

William C. Martyn, Lyndhurst, and Ronald J. Olwert, Willoughby, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed July 17, 1972, Ser. No. 272,489

Int. Cl. H01j *1/62, 63/04*

U.S. Cl. 117—33.5 L **11 Claims**

A solution of aluminum-s-butoxide combined with either or both of tetrabutyl titanate and tributyl antimony is applied to

the surface of a glass lamp bulb or other glass object, and heated to about 400°C or higher. Such treatment on the exterior of a bulb hardens and strengthens the glass surface. When the treatment is applied to the interior of a bulb, the

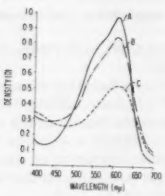
treated surface acts as a barrier to alkali materials in the glass, and also hardens and strengthens the bulb. Preferably, a sufficient amount of the aluminum-*s*-butyoxide is used so that the reaction produces some aluminum oxide which functions as a getter for water vapor and oxygen in the bulb.

3,833,400

SHEET WITH IMPROVED IMAGE DURABILITY

Hiroharu Matsukawa, and Takao Hayashi, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 12, 1971, Ser. No. 198,316
Claims priority, application Japan, Nov. 13, 1970, 45-99983
Int. Cl. B41c *1/06*
U.S. Cl. 117—36.2 **10 Claims**



Pressure sensitive recording sheets of improved image durability are obtained due to the pressure of a hydrogen quinoline compound.

3,833,401

DEGRADABLE POLYETHYLENE FILM

Alvin R. Ingram, Murrysville, Pa., assignor to Arco Polymers, Inc., Pittsburgh, Pa.

Filed Nov. 16, 1972, Ser. No. 307,030
Int. Cl. 47 *DIG. 7*; **B41m** *1/40*
U.S. Cl. 117—38 **3 Claims**

Polyethylene film is caused to degrade in a predetermined pattern by the printing of the pattern on the surface of the film using printing ink containing a degradation promoter such as ultraviolet sensitizers, oxidation promoters, or embrittling agents.

3,833,402

GRAPHITE FIBER TREATMENT

Wayne L. Elban, Westminster, Md., and James V. Larsen, Salt Lake City, Utah, assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 27, 1972, Ser. No. 238,262
Int. Cl. C23c *3/04*
U.S. Cl. 117—46 CA **14 Claims**

High modulus graphite fiber reinforced composites with improved interlaminar shear strength are provided by depositing a metal containing compound on the graphite fiber, decomposing the metal containing compound at elevated temperatures in an inert atmosphere and then using the fiber to form a composite.

3,833,403

PROCESS FOR SUBBING PHOTOGRAPHIC POLYESTER FILMS

Motoo Kogure; Yasuji Muroi, and Hideyasu Ohta, all of Tokyo, Japan, assignors to Konishiroku Photo Industry, Co., Ltd.

Filed May 23, 1973, Ser. No. 363,051
Claims priority, application Japan, May 30, 1972, 47-52978
Int. Cl. G03c *15/00, 17/00*; **C23d** *3/00*; **B44d** *1/092, 1/52*
U.S. Cl. 117—47 A **3 Claims**

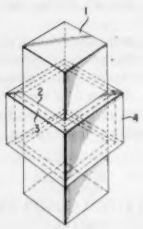
The present invention is directed to a process of subbing photographic polyester film comprising election bombard of one side the film and then treating said film side with a subbing composition containing (a) a copolymer latex of a diolefin polymerized with an ethylenically unsaturated monomer and (b) a compound having two or more groups selected from ethyleneimino and methylsulfonyloxy group.

3,833,404

VIBRATION OR SOUND DAMPING COATING FOR VIBRATORY STRUCTURES

Leslie H. Sperling, Bethlehem, and David A. Thomas, Lower Saucon Township, both of Pa., assignors to Research Corporation, New York, N.Y.

Filed May 31, 1972, Ser. No. 258,391
Int. Cl. F16f *15/00*
U.S. Cl. 117—63 **15 Claims**



Damping means for a vibratory part comprising an inner layer of visco-elastic polyblended material comprising an interpenetrating polymer networks composition consisting essentially of 5–95 percent by weight of an elastomer (e.g., polyethyl acrylate) and 95–5 percent by weight of a plastic (e.g., polystyrene, polymethylmethacrylate), applied to said part, and an outer plastic constraining layer applied over said viscoelastic material.

3,833,405

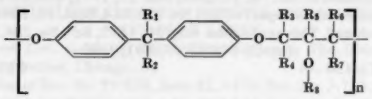
PROCESS FOR THE PRODUCTION OF FILM BASE MATERIAL

Edward William Lee; Keith Reid Tatchell; Kenneth John Challis, and Kenneth Archibald Cockerton, all of Ilford, England, assignors to Ilford Limited, Ilford, Essex, England

Continuation-in-part of Ser. No. 113,615, Feb. 8, 1971, Pat. No. 3,701,680. This application Aug. 15, 1972, Ser. No. 280,895
Claims priority, application Great Britain, July 12, 1972, 32492/72
Int. Cl. B32b *27/36*; **G03c** *1/80*
U.S. Cl. 117—76 F **7 Claims**

Process for the production of film base material wherein one side of a film of synthetic linear polyester is treated with

an organic solvent solution of a phenolic adhesion promoting agent, the solvent is removed, the so-treated side is coated with an organic solvent solution of a phenoxy resin which has been partially esterified with an organic polycarboxylic acid and the solvent is removed, the phenoxy resin having the formula



wherein each of $R_1 - R_7$ is a hydrogen atom or a lower alkyl or cyclohexyl group, R_8 is a hydrogen atom or represents the acyl residue of a partial ester of an organic polycarboxylic acid, n is at least 50, and from 10 to 95% of the R_8 groups are said acyl residue.

3,833,406

CLOSED CONTAINER WITH DESICCANT COATING ON INSIDE SURFACE THEREOF

Paul L. White, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Aug. 7, 1972, Ser. No. 278,402
Int. Cl. B65d *23/02*
U.S. Cl. 117—97 **7 Claims**

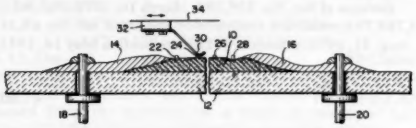
Good desiccant coatings can be obtained on the inside surface of a closed container such as glass, ceramic, plastic or metal by applying thereto a nonparticulate, thin film about 10 microns thick consisting essentially of aluminum monohydrate, alumina, silica or oxides of titanium, zirconium, thorium, magnesium and calcium or combinations thereof dispersed in an aqueous medium and activating said coating by heat or vacuum.

3,833,407

UNITARY RESISTOR AND SHUNT

Sergei Schebalin, Ambler, Pa., assignor to Honeywell Inc., Minneapolis, Minn.

Division of Ser. No. 122,777, March 10, 1971, Pat. No. 3,743,997. This application June 12, 1972, Ser. No. 261,971
Int. Cl. B44d *1/18;* **H01c** *13/00*
U.S. Cl. 117—212 **2 Claims**



A method of producing a distributed shunt for resistor film. The steps of this method comprising the selection of a conductive material whose sintering temperature is substantially lower than the sintering temperature of the resistive material; locating the conductive material in single or segmented form on the surfade of the resistive material intermediate end portions of the latter and firing the conductive material on the resistive material at the sintering temperature of the conductive material whereby the tendency to diffusion between said conductive and resistive materials is minimized and the resistivity of the resistive material is reduced while maintaining substantially constant the temperature coefficiient of resistivity and stability of the resistive material.

3,833,408

VIDEO DISCS HAVING A METHYL ALKYL SILICONE COATING

Dennis Lee Matthies, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 19, 1972, Ser. No. 245,663
Int. Cl. G11b *5/00*
U.S. Cl. 117—217 **5 Claims**

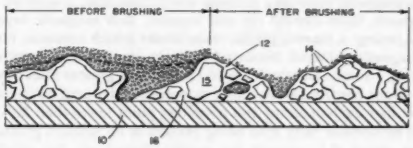
Application of certain methyl alkyl siloxane compounds to the surface of video disc replicas reduces surface friction generated during playback with no sacrifice in video quality.

3,833,409

DONOR SHEET FOR PULSED ELECTRICAL PRINTING

John Peshin, Westwood, Mass., assignor to The Carter's Ink Company, Cambridge, Mass.

Filed Jan. 7, 1972, Ser. No. 216,194
Int. Cl. B44d *1/16, 1/18*
U.S. Cl. 117—218 **5 Claims**



A printing ribbon for non-impact electrical printing consists of an insulating base film, having a microcavernous surface formed by microscopic crags having deep rough and irregular pits or valleys between them with fine conductive printing particles loosely retained on and in the surface.

3,833,410

HIGH STABILITY THIN FILM ALLOY RESISTORS

Choh-Yi Ang, Santa Ana; Robert F. Bailey, Los Alamitos, and John R. Ogren, Hawthorne, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Dec. 30, 1971, Ser. No. 213,980
Int. Cl. B44d *1/18;* **H01c** *7/00, 17/00*
U.S. Cl. 117—227 **10 Claims**

High stability thin film alloy resistors can be made from a constant conductivity alloy comprising a predominant amount of platinum, rhodium, iridium, palladium, gold, or silver and a minor amount of at least two metals selected from tungsten, rhenium, tantalum, molybdenum, hafnium, zirconium, or niobium. The constant conductivity alloy is deposited onto a nonconducting substrate to a thickness of between 10 and 5,000 angstroms.

3,833,411

ARTICLES COATED WITH ALKALI-SOLUBLE POLYESTER-TYPE RESINS AND METHOD OF PRODUCING THEM

Hargovind Nihchaldas Vazirani, Stirling, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation-in-part of Ser. No. 190,411, Oct. 18, 1971, abandoned, which is a continuation-in-part of Ser. No. 131,478, April 5, 1971, abandoned. This application Apr. 5, 1973, Ser. No. 348,067
Int. Cl. B44d *1/34, 1/42;* **C09d** *3/64*
U.S. Cl. 117—232 **3 Claims**

The alkali-soluble polyester resins described herein contain trimellitic anhydride in the amount of 41 to 44 parts by weight, dipropylene glycol in the amount of 28 to 31 parts by weight, glycerol in the amount of 6.3 to 7.2 parts by weight and castor oil in the amount of 20 to 26 parts by weight of the

total composition. In addition, neopentyl glycol may be substituted for dipropylene glycol in amounts up to 16 parts by weight of the total composition, in which case the combined proportion of dipropylene glycol and neopentyl glycol may be reduced to 26.5 parts by weight. The components are proportioned within the ranges stated to give an OH/COOH ratio of from 1.05:1 to 1.15:1. When fully cured, the resins are useful as insulating coatings on wire.

3,833,412

MAGNETIC RECORDING MEDIUM

Goro Akashi; Masaski Fujiyama, and Yasuyuki Yamada, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 754,733, Aug. 22, 1968, abandoned. This application June 25, 1971, Ser. No. 157,042
Claims priority, application Japan, Aug. 24, 1967, 42-54380
Int. Cl. H01f *10/02*
U.S. Cl. 117—240 4 Claims

A magnetic recording medium which comprises a support; a magnetic layer carried on said support, said magnetic layer comprising: a thermo-plastic resin binder which contains: ferromagnetic material dispersed th erein, an abrasive material having a size of less than 5 μ and a hardness greater than 6 on the Mohs hardness scale and a monobasic fatty acid having at least four carbon atoms and a melting point lower than 50°C. said monobasic fatty acid being present in an amount greater than about 0.1 percent by weight, based on the whole magnetic layer.

3,833,413

SOLIDIFIED PRODUCT FROM HIGH FRUCTOSE CORN SYRUP AND PROCESS

Elmer F. Glabe, Chicago; Perry W. Anderson, Niles, and Stergios Laftsidis, Chicago, all of Ill., assignors to Food Technology, Inc., Chicago, Ill.

Filed Sept. 5, 1972, Ser. No. 286,568
Int. Cl. A23l *1/08*
U.S. Cl. 127—29 7 Claims

A solidified product from high fructose corn syrup is prepared by a process in which a high protein, high water soluble soy protein is incorporated with a high fructose corn syrup to form a slurry prior to dehydration and enhances the crispness and rapidity of crystalline formation when the slurry is subsequently dehydrated as a thin film on a heated surface.

3,833,414

ALUMINIDE COATING REMOVAL METHOD

John J. Grisik, Cincinnati, Ohio, and Ellis J. Airola, Ipswich, Mass., assignors to General Electric Company, Cincinnati, Ohio

Filed Sept. 5, 1972, Ser. No. 286,196
Int. Cl. B08b *3/08*; C23g *1/02*, *1/14*
U.S. Cl. 134—3 6 Claims

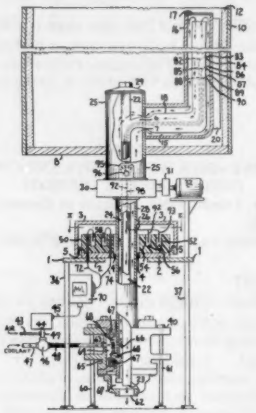
An improved method for removing an aluminide coating from an article includes a sequential treatment of an aqueous mixed acid solution of nitric and phosphoric acids, an alkaline permanganate aqueous solution and then the mixed acid solution repeated. In one form in which the article has been exposed to air and products of fuel combustion at elevated temperatures, the method combines a mechanical pretreatment with the chemical stripping operation. An optional final mechanical removal of residue can be included. The mechanical pretreatment includes the use of angular metallic particles, such as steel, which are soluble in a subsequently applied solution, such as the mixed acids.

3,833,415

METHOD AND APPARATUS FOR TEMPERATURE CONTROL OF A ROTATING METAL OXIDE SCRAPER ELEMENT

Elgin E. Young, Norton, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 147,386, May 27, 1971, which is a continuation-in-part of Ser. No. 856,744, Sept. 10, 1969, abandoned. This application Aug. 30, 1972, Ser. No. 284,787
Int. Cl. B08b *9/08*; B01j *1/00*
U.S. Cl. 134—6 4 Claims



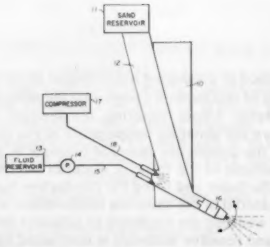
Wall temperatures within a movable, internally cooled scraper element that is used to dislodge metal oxide accumulation from the internal wall of a reactor are monitored by a thermocouple electrically connected to mercury baths which are in turn electrically connected to a temperature recorder. The thermocouple output can be used to control a regulator of coolant fed to the scraper element.

3,833,416

SAND BLASTING OF METAL SURFACES AT AN ANGLE OF LESS THAN 45°

Henry Fleischer, 18 Notch Park Rd., Little Falls, N.J. 07424

Division of Ser. No. 235,293, March 16, 1972, Pat. No. 3,769,753; which is a continuation-in-part of Ser. No. 68,151, Aug. 31, 1970, abandoned. This application May 14, 1973, Ser. No. 359,652
Int. Cl. B08b *5/02*
U.S. Cl. 134—7 4 Claims



A method for removing paint from a metal surface wherein a mixture of a highly volatile chemical solvent and an abrasive

(such as sand) is sprayed onto the metal surface (such as an automobile) at an oblique angle. The abrasive removes the paint without chipping and roughs up the surface while the chemical solvent removes film and dirt thereby enabling the surface to receive a new coat of paint.

3,833,417

METHOD FOR CLEANING PIPLINES ASSOCIATED WITH BULK TANKS

Andrew Geo. Griparis, Joliet, Ill., assignor to The Diversey Corporation, Chicago, Ill.

Division of Ser. No. 59,828, June 22, 1970, Pat. No. 3,728,157, which is a division of Ser. No. 763,823, Sept. 30, 1968, abandoned. This application Feb. 16, 1972, Ser. No. 226,571

Int. Cl. B08b *9/06;* **C23g** *3/04*

U.S. Cl. 134—22 C **3 Claims**

Apparatus for spray cleaning the soiled interior surfaces of a tank by alternately: (1) applying a burst of cleansing liquid through a sprayer which directs a heavy spray mist to saturate the interior tank surfaces; and (2) enabling the applied cleansing liquid to soak for a timed interval on the tank surfaces. Portions of the apparatus can be used for cleaning pipelines associated with the tank. A tank sprayer which includes an equalization chamber for equalizing the flow of liquid around the spray head and a restricted outlet at one end of the equalization chamber to form a heavy spray mist in cleaning tank interiors. A quick drain valve for rapidly draining large amounts of liquid from a conduit including a solenoid actuated seal for selectively sealing or opening a series of drain openings around the perimeter of the valve. A liquid level indicating apparatus for indicating the drop in level below a preset level of liquid in any one of a number of closed containers each having a narrow neck for filling the container, including a detector inserted through each container neck for detecting the level changes, and a single air pressure sensor responsive to the detected changes in any of the containers for indicating a low level condition.

ERRATUM

For Class 134—24 see:
Patent No. 3,833,010

3,833,418

CLEANING OF HAIR BRUSHES WITH REDUCING AGENTS

Bernard Weiss, 3 Gay Dr., Kings Point, N.Y. 11024; Stanley Brechner, Orange, and Daniel Schoenholz, Basking Point, both of N.Y., assignors to said Weiss, by said Brechner and said Schoenholz

Filed Nov. 20, 1972, Ser. No. 308,101

Int. Cl. A45d *24/40;* **B08b** *3/08, 3/10*

U.S. Cl. 134—42 **10 Claims**

Hairbrushes are cleaned by contacting the hairbrush with a solution of a reducing agent. The brushes are clean as removed from the solution, or a mass of destroyed hair produced by the solution treatment is removed by rinsing.

3,833,419

SOLUTION MEANS FOR REMOVING HAIR FROM HAIR BRUSHES

Bernard Weiss, 3 Gay Drive, Kings Point, N.Y.; Stanley Brechner, Orange, and Daniel Schoenholz, Basking Ridge, both of N.J., assignors to Said Weiss, by said Brechner and Schoenholz

Filed Nov. 20, 1972, Ser. No. 308,102

Int. Cl. A45d *24/40;* **B08b** *3/08, 3/10*

U.S. Cl. 134—42 **6 Claims**

Hair brushes are cleaned of matted hair by soaking them in a solution derived from a solid oxidizing agent, preferably one capable of providing available chlorine in defined concentrations. Hypochlorites, especially lithium hypochlorite, is preferred.

3,833,420

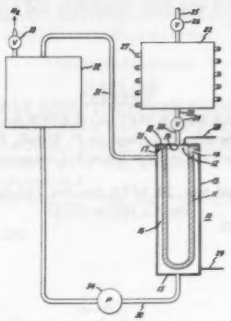
BATTERY CASING AND REGENERATIVE METAL-WATER BATTERY

Fritz G. Will, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 20, 1972, Ser. No. 245,840

Int. Cl. H01m *35/00*

U.S. Cl. 136—6 R **4 Claims**



A battery casing is disclosed which includes a reservoir in sealed communication with an inner vessel of a solid crystalline ion-conductive material, an outer vessel surrounds the inner vessel and defining therewith a narrow fluid passageway, and a fluid storage and circulating system for providing fluid flow through the passage. A regenerative metal-water battery has the above type of casing with a sodium or potassium anode in the inner vessel and water as the oxidant in the outer vessel.

3,833,421

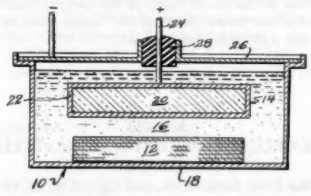
SECONDARY ELECTROCHEMICAL CELLS WITH A CHALCOGEN CATHODE

Richard J. Rubischko, Minnetonka, Minn.; Elton J. Cairns, Lisle, and Robert K. Steunenberg, Naperville, both of Ill., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Dec. 27, 1972, Ser. No. 318,806

Int. Cl. H01m *35/00*

U.S. Cl. 136—6 LF **4 Claims**



This invention consists of a novel cathode, and a novel method for making such cathode, for use in a secondary electrochemical power-producing cell having an anode containing a molten alkali-metal of low electronegativity, an electrolyte containing alkali-metal ions, and a cathode containing a reactant comprising a chalcogen. The cathode comprises a solid, porous substrate structure, impregnable by the reactant, having interconnected pores. These interconnected pores have

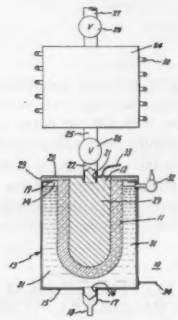
their interior surfaces partially coated with a layer of electronically-conducting metal wettable by the electrolyte and are filled with both the electrolyte and the chalcogen-containing reactant. The novel method for making this cathode structure comprises vapor depositing the electronically-conducting metal onto the surfaces of the interconnected pores by vaporizing a volatile compound containing the metal in the presence of an inert gas, and then passing the resulting vapor-inert gas mixture through the porous substrate structure while also passing an electric current therethrough. This structure is then impregnated with both electrolyte and a chalcogen-containing reactant.

3,833,422

REGENERATIVE METAL-WATER BATTERY

Fritz G. Will, Scotia, and Stephan P. Mitoff, Elnora, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 20, 1972, Ser. No. 245,841
Int. Cl. H01m *35/02*
U.S. Cl. 136—20 **10 Claims**



A regenerative metal-water battery is disclosed which includes a metallic sodium or potassium reservoir in sealed communication with an inner vessel of a solid metal ion-conductive material, the metallic sodium or potassium in the reservoir, means for heating the metal, the metal adapted to provide an anode in the inner vessel of the battery, and water as the oxidant in the outer vessel of the battery and in contact with the outer wall of the inner vessel.

3,833,423

FUEL CELL WITH WC CATALYST-MATERIAL PROTECTION

Franz Arthur Pohl, Gotzenhain, and Harald Bohm, Oberursel, both of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed Sept. 20, 1971, Ser. No. 182,144
Claims priority, application Germany, Sept. 19, 1970, 2046319
Int. Cl. H01m *27/04, 11/00*
U.S. Cl. 136—86 D **17 Claims**

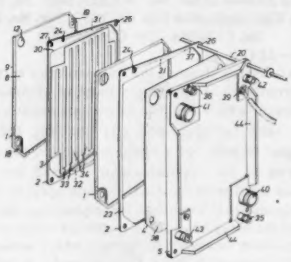
Autoxidizable fuel cell catalyst material is covered after its production with a substance protecting it against autoxidation. The substance is then removed before placing the fuel cell in operation.

3,833,424

GAS FUEL CELL BATTERY HAVING BIPOLAR GRAPHITE FOAM ELECTRODES

Gerhard Louis, Hofheim, and Harald Bohm, Glashutten, both of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt, Germany

Filed Mar. 27, 1973, Ser. No. 345,458
Claims priority, application Germany, Mar. 28, 1972, 2215070
Int. Cl. H01m *27/04*
U.S. Cl. 136—86 R **11 Claims**



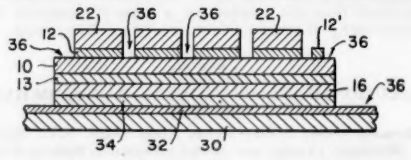
A gas fuel cell battery is formed of a series of alternating bipolar electrodes and cell frames. Each bipolar electrode comprises a flexible graphite foam foil and active (anode and cathode) layers secured to opposite foil faces. Each face of a cell frame is in engagement with a bipolar electrode along a marginal zone of the foil that is outside the perimeter of the active layer. Gas is contacting that face of each active layer that is oriented towards the foil to which it is secured, while electrolyte is contacting that face of each active layer that is oriented away from the foil to which it is secured. The active layers are provided with openings for the gas supply, while the cell frames have throughgoing bores and channels for the electrolyte supply.

3,833,425

SOLAR CELL ARRAY

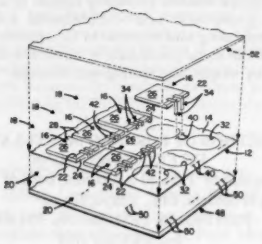
Charles Z. Leinkram, Bowie, Md.; William D. Oaks, Midland, Va.; John A. Eisele, Oxon Hill, Md., and Bruce J. Faraday, Annandale, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 23, 1972, Ser. No. 228,593
Int. Cl. H01l *15/02*
U.S. Cl. 136—89 **7 Claims**



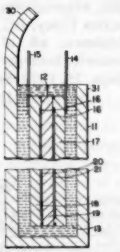
A solar cell planar array fabricated by a method from the solar cells to the mounting panel. An electrically insulative, thermally conductive wafer is soft-soldered to the surface of the metallic mounting panel. The top surface of the wafer bears spaced electrically insulative, thermally conductive prominences thereon. The solar cells are attached on top of the prominences.

3,833,426
SOLAR ARRAY
Hans G. Mesch, Manhattan Beach, Calif., assignor to TRW Inc., Redondo Beach, Calif.
Filed Nov. 8, 1973, Ser. No. 414,017
Int. Cl. H01l 15/02
U.S. Cl. 136—89 10 Claims



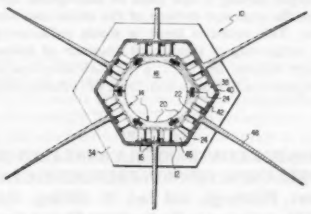
A solar array having solar cells arranged in parallel strings at the front side of a supporting substrate with the corresponding cells in the several strings arranged in rows transverse to the strings. Each cell has a rear contact surface facing and exposed through an opening in the substrate and front contact and light sensitive surfaces. The cells in each cell string are connected in electrical series by series interconnectors, each passing between a pair of adjacent cells and through the substrate. Each interconnector is electrically joined at its front end to the front contact surface of the adjacent cell and at its rear end to the rear contact surface of the other adjacent cell through the corresponding substrate opening. The cells in each cell row are connected in electrical parallel by parallel interconnector strips electrically jointed to the rear ends of the corresponding series interconnectors.

3,833,427
PLANAR BATTERY, PROCESS OF MANUFACTURE THEREOF AND FILM CASSETTE INCLUDING THE SAME
Edwin H. Land, Cambridge, and Robert M. Delahunt, Norwell, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.
Filed July 27, 1973, Ser. No. 383,173
Int. Cl. H01m 2/04
U.S. Cl. 136—111 38 Claims



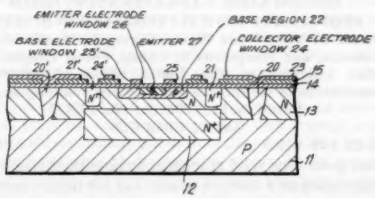
A relatively thin, flat or planar battery which includes one or more cells in series relationship which comprise a planar anode in superposed relationship with a planar cathode and a separator disposed intermediate and extending substantially coextensive the facing surfaces of the anode and cathode and possessing marginal portions and an aqueous electrolyte permeable central portion. Each cell includes an aqueous electrolyte disposed in the central portion of the separator and in contact with the facing surfaces of both the anode and the cathode and each battery possesses an electrically nonconducting, vapor-impervious hydrophobic sealant extending coextensive the marginal surfaces of the battery and intermediate the marginal portions of the separator and next adjacent facing surfaces. The energy generating components of the battery are disposed in and secured by the sealant to a container retaining both the energy-providing components of the battery cell or cells and the sealant selected.

3,833,428
DIRECT HEAT REJECTION PATH RADIOISOTOPIC THERMOELECTRIC GENERATOR
Donald L. Snyder, Fork; John H. Himes, Jappa, and Milton F. Pravda, Baltimore, all of Md., assignors to Isotopes, Incorporated, Westwood, N.J.
Filed Sept. 25, 1969, Ser. No. 860,884
Int. Cl. G21h 1/10
U.S. Cl. 136—202 6 Claims



Compression springs on the hot side, bias the thermoelectric elements of the radioisotopic powered thermo-electric generator into contact with the casing wall. The bus straps, which electrically connect the cold ends of the thermoelectric elements are bonded directly to the inner wall of the casing by a pressure sensitive epoxy adhesive which is preferably a dielectric but a good thermal conductor thereby eliminating the need for cold-end hardware.

3,833,429
METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE
Yoshinobu Monma; Shigeharu Abe; Ryuichi Miwa, all of Kawasaki, and Eiji Mitsushima, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed Nov. 28, 1972, Ser. No. 310,168
Claims priority, application Japan, Dec. 22, 1971, 46-104878
Int. Cl. H01l 7/44
U.S. Cl. 148—1.5 20 Claims



A high speed bipolar transistor with a small base area is produced by silicon nitride double films formed on a silicon

substrate. The upper nitride film has a window for base diffusion and the lower nitride film has a window for emitter diffusion which overlaps the base diffusion window. The emitter diffusion occurs only in the overlapped portion of the base diffusion window and the emitter diffusion window. The diffusion source used for emitter diffusion is removed by using the nitride film as a mask.

3,833,430

TREATMENT OF STAINLESS STEEL AND SIMILAR ALLOYS TO REDUCE HYDROGEN OUTGASSING

Eugene F. Hill, Belmont, and Jack L. Walls, Saratoga, both of Calif., assignors to Varian Associates, Palo Alto, Calif.

Filed Dec. 26, 1972, Ser. No. 318,139
Int. Cl. C23b *9/00, 11/00*
U.S. Cl. 148—31.5 **3 Claims**

Outgassing of hydrogen from high-vacuum system components made of stainless steel and similar alloys can be minimized if the metal surfaces to be exposed to the vacuum are treated according to the technique disclosed herein. First, an adherent layer comprising a mixture of oxides and nitrides is formed on the metal surfaces. This oxide and nitride mixture layer serves as a barrier to hydrogen diffusion. Then, a reduced layer having a low heat of adsorption for water is formed on the exposed surface of the oxide and nitride mixture layer. This reduced layer is made sufficiently thin to preclude outgassing of significant amounts of hydrogen into the vacuum system. In effect, a vacuum envelope is formed which outgasses only from a thin layer of reduced oxide.

3,833,431

PROCESS FOR CONTINUOUSLY ANNEALED SILICON STEEL USING TENSION-PRODUCING GLASS

Karl Foster, Pittsburgh, and Jack W. Shilling, Monroeville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 9, 1971, Ser. No. 206,511
Int. Cl. H01f *1/04*
U.S. Cl. 148—113 **9 Claims**

A process is described for producing silicon steel containing nominally 3.25 percent silicon, by a continuous annealing process. The magnetic characteristics exhibited by the fully processed steel approach those of commercially available silicon steel but without the necessity of extensively desulfurizing the steel from that sulfur content which is usually obtained employing a commercial process. Essentially, the process consists of selecting a cold worked, decarburized semiprocessed silicon steel which is thereafter subjected to a continuous strand annealing at a temperature in the range between about 1,000°C and about 1,100°C in order to substantially completely recrystallize the steel by a secondary recrystallization process and the application of a tensile stress of at least 200 psi to the underlying steel for producing improved watt losses over that material having substantially the same sulfur content but which was manufactured by regular commercial processes.

3,833,432

SODIUM AZIDE GAS GENERATING SOLID PROPELLANT WITH FLUOROCARBON BINDER

Bertram K. Moy, White Plains; Gerald L. MacKenzie, Port Tobacco, and Marguerite S. Chang, Forest Heights, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 11, 1970, Ser. No. 14,827
Int. Cl. C06d *5/06*
U.S. Cl. 149—19.3 **12 Claims**

Gas generating solid propellant compositions which utilize sodium azide as a nitrogen source and are further comprised of a fluorocarbon binder material and a combustion catalyst of finely divided colloidal silicon dioxide and/or finely divided carbon black.

3,833,433

METHOD OF PRODUCING TARNISH RESISTANT COPPER AND COPPER ALLOYS AND PRODUCTS THEREOF

Elmer J. Caule, New Haven, Conn., assignor to Olin Corporation, New Haven, Conn.

Filed June 14, 1973, Ser. No. 369,904
Int. Cl. H05k *3/06*
U.S. Cl. 156—3 **15 Claims**

The disclosure teaches providing copper or a copper alloy, applying a phosphoric acid - dichromate solution to said material, immersing said material in an aqueous solution containing an alkali metal phosphate in a concentration of at least 18 percent by weight, and rinsing said material.

3,833,434

METHOD OF FORMING MULTI-LAYER INTERCONNECTIONS

Akira Kikuchi, and Takashi Agatsuma, both of Tokyo, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 20, 1973, Ser. No. 334,073
Int. Cl. C23f *1/02*
U.S. Cl. 156—8 **10 Claims**

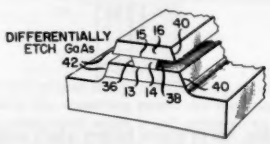
A method of forming multi-layer interconnections, wherein a porous metal oxide film overlying a metal layer is side-etched by utilizing the larger etching rate of the metal oxide film compared to that of the metal layer, so as to form an electrode interconnection portion of the metal layer which is etched into a gently sloping shape at the ends of its upper surface and its sides corresponding to the side-etched parts of the porous film. Second and higher-order layers of electrode interconnection portions are successively formed in such a manner that an insulating film is interposed between the electrode interconnection portion with the ends of its upper surface and its sides formed into the gently sloping shape and each layer of electrode interconnection portion to be formed over the former electrode interconnection portion.

3,833,435

DIELECTRIC OPTICAL WAVEGUIDES AND TECHNIQUE FOR FABRICATING SAME

Ralph Andre Logan, Morristown; Bertram Schwartz, Westfield; Joseph Charles Tracy, Jr., Bernardsville, and William Wiegmann, Middlesex, all of N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Sept. 25, 1972, Ser. No. 291,937
Int. Cl. H01l *7/50*
U.S. Cl. 156—11 **12 Claims**



A method of fabricating dielectric optical waveguides comprises the steps of: (1) fabricating a single or double heteros-

tructure from the GaAs-AlGaAs system preferably by liquid phase epitaxy or molecular beam epitaxy; (2) forming a native oxide layer on the top surface of the heterostructure by anodization in H_2O_2; (3) removing a portion of the oxide layer to form a mask and hence to define the waveguide shape in the direction of light propagation; and (4) forming a mesa-like structure with optically flat side walls by etching at a slow rate in Br_2-CH_3OH. After step (4) two alternative techniques leading to structurally different waveguides may be followed. In one technique, an AlGaAs layer is epitaxially grown over the mesa to form a two dimensional waveguide. In the other technique, the edges of the active region of an AlGaAs double heterostructure are differentially etched in a neutral solution of H_2O_2. The latter step is particularly useful in the fabrication of active devices because the resulting structure is self-masking, thereby facilitating the formation of electrical contacts.

3,833,436

ETCHING OF POLYIMIDE FILMS

Benjamin F. Hillis, Lindstrom, Minn.; Russell D. Klint, Roberts, Wis., and William D. Cross, St. Paul, Minn., assignors to Buckbee-Mears Company, St. Paul, Minn.

Filed Sept. 5, 1972, Ser. No. 286,344
Int. Cl. B44c *1/22*
U.S. Cl. 156—13 **1 Claim**

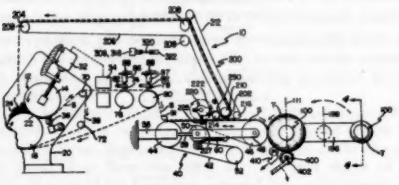
A process for the etching of polyimide films which includes applying a photo sensitive resist of a predetermined viscosity and utilizing hydrazine as an etchant to remove unwanted sections of the polyimide film after exposing and developing the light sensitive resist.

3,833,437

TIRE BUILDING METHOD

Paul E. Appleby, Cuyahoga Falls; Christopher E. Christie, Akron, and Edwin S. Woodhall, Cuyahoga Falls, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 832,164, June 11, 1969, Pat. No. 3,746,597. This application Oct. 10, 1972, Ser. No. 296,445
Int. Cl. B29h *17/02, 17/10*
U.S. Cl. 156—130 **7 Claims**



A mill for forming a thin sheet of a curable elastomer and a tire carcass receiving drum are combined in apparatus including a conveyor spaced from the mill and engageable with a tire carcass on the drum so as to rotate the drum and wind thereon a continuous plurality of convolutions of the sheet. Slitters located in a space traversed by the sheet between the mill and the conveyor and controlled by a profiling device to be movable in timed relation to the rotation of the carcass vary the width or widths of the sheet portion applied while a second conveyor diverts remaining portions of the sheet from the first conveyor for return to the mill.

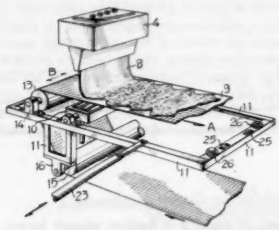
The foregoing abstract is not to be taken as limiting the invention of this application, and in order to understand the full nature and extent of the technical disclosure of this application, reference must be made to the accompanying drawings and the following detailed description.

3,833,438

PROCESS FOR THE MANUFACTURE OF A NON-WOVEN WEB OF CONTINUOUS FILAMENTS THROUGH THE WET STRETCH SPINNING METHOD

Tutomu Kaneko; Takashi Turumi; Shuichi Emori, and Ken Ito, all of Nobeoka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Aug. 30, 1972, Ser. No. 284,852
Int. Cl. D04h *3/16*
U.S. Cl. 156—167 **4 Claims**



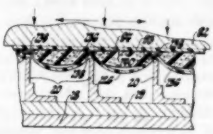
A plurality of filaments are extruded simultaneously from a large number of spinning orifices arranged in a rectangular pattern. The filaments are contacted by a coagulating bath as they pass downwardly through a funnel arrangement to cause stretching and coagulation of the filaments prior to depositing the filaments onto a moving pervious conveyor which is oscillated periodically in a direction transverse to its direction of movement.

3,833,439

METHOD OF DIELECTRICALLY EMBOSSING RISERS IN A TRIM ASSEMBLY

Kenneth A. Smith, Washington, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed July 24, 1972, Ser. No. 274,821
Int. Cl. B31f *7/00*
U.S. Cl. 156—219 **4 Claims**



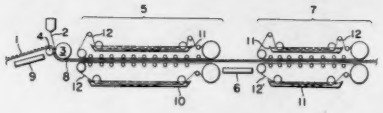
A method for making a decorative trim assembly with a dielectric embossing press in which one of the electrodes includes a plurality of spaced embossing blades and the other electrode has a flat face formed by a yieldable material. The method comprises the steps of preforming a sheet of thermoplastic material with a plurality of risers defined by spaced trim lines followed by placing the sheet on the electrode with the embossing blades contacting the trim lines. Afterwards, a coextensive sheet of filler material is positioned onto the sheet of thermoplastic material and the electrodes are moved toward each other so as to cause the embossing blades to compress the cover sheet and the sheet of filler material into the yieldable material. Sufficient pressure is then applied to the composite sheets to cause the sheet of filler material to be split along the embossing blades to form a plurality of separate strips. This is followed by opening the press and placing a base sheet over the strips of filler material and dielectrically bonding the sheet of thermoplastic material to the base sheet along the trim lines.

3,833,440

METHOD OF MAKING HOLLOW PLANAR BOARD OF SYNTHETIC RESIN MATERIAL

Yoshikazu Kashiwa; Kunio Takagi; Seiju Kezuka, all of Yokohama; Rikio Kuroda; Toshiharu Hirayama, both of Kawasaki; Takeshi Kamiya, Kamakura; Masayuki Ono, Iwatsuki, all of Japan, and Kabushiki Kaisha Tomoku, 03, Otaru-shi, both of Japan, assignors to The Nisseki Plastic Chemical Co., Ltd., Kawasaki-ku, Kawasaki

Filed June 6, 1972, Ser. No. 260,282
Int. Cl. B29c *19/00*; B29b *31/00*
U.S. Cl. 156—244 7 Claims



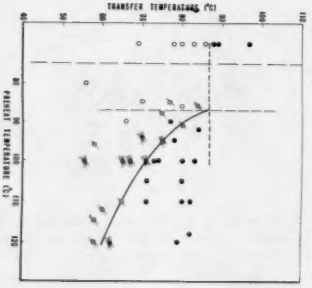
A method of making a hollow planar board of synthetic resin consisting of a core and a first and a second liner, in which the temperature of the first liner relative to that of the second liner is suitably controlled to prevent undesirable warping of the product. The core is made by embossing a synthetic resin sheet so as to provide many closed cells in the board.

3,833,441

THERMOGRAPHIC PROCESSES

Robert Bernard Heiart, Middletown, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 232,678, Oct. 24, 1962, abandoned. This application May 7, 1971, Ser. No. 141,211
Int. Cl. B41m *5/26*; B32b *31/26, 31/28*
U.S. Cl. 156—234 5 Claims



This invention relates to a thermographic process of image formation and more particularly to such a process for forming images by heating, imagewise, to a temperature above a softening temperature, but below the thermal decomposition temperature, a solid layer of a mixture of a thermoplastic, amorphous, organic polymer and a liquid plasticizer therefor, the mixture being capable of existing in a metastable state and a stable state for a period sufficient to convert the stable polymer to the metastable state, heating the entire surface of the layer to a temperature between the softening temperatures of the stable and metastable state, and converting the softened exposed image areas to a visible image, e.g., by applying finely divided colored particles to the layer and removing them from non-exposed areas or thermally exposed image areas are transferred to a separate image receptive surface. The simple procedure is a dry process, and images of high quality and stability are obtained rapidly.

3,833,442

METHOD OF LAP-SEAMING A LACQUERED METAL CONTAINER BODY

Philip W. Russell, Belmont; Charles W. Simons, Bedford, and Francis L. Chupka, Jr., Billerica, all of Mass., assignors to W. R. Grace & Co., New York, N.Y.

Division of Ser. No. 165,365, July 22, 1971, abandoned. This application Oct. 12, 1972, Ser. No. 297,124
Int. Cl. C09j *5/02*; B65d *7/38*; B32b *15/08*
U.S. Cl. 156—331 1 Claim

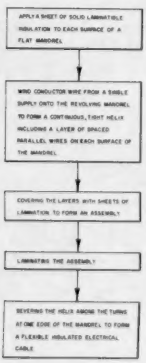
A novel adhesive consisting of a blend of a polyamide with 1 to 15 percent of certain polymer and copolymer additives is described, together with its use in lap-seaming lacquered metal (e.g., tin-free steel or aluminum) containers.

3,833,443

METHOD OF MAKING FLEXIBLE CONDUCTOR CABLE

Dwight D. Naseth, Saugus, and Joseph A. Delgadillo, Granada Hills, both of Calif., assignors to Fortin Laminating Corporation, San Fernando, Calif.

Filed Oct. 20, 1972, Ser. No. 299,462
Int. Cl. H01b *13/08*
U.S. Cl. 156—55 9 Claims


APPLY A SHEET OF SOLID LAMINATABLE INSULATION TO EACH SURFACE OF A FLAT MANDREL
WIND CONDUCTOR WIRE FROM A SINGLE SUPPLY ONTO THE REVOLVING MANDREL TO FORM A CONTINUOUS, TIGHT HELIX INCLUDING A LAYER OF SPACED PARALLEL WIRES ON EACH SURFACE OF THE MANDREL
COVERING THE LAYERS WITH SHEETS OF LAMINATION TO FORM AN ASSEMBLY
LAMINATING THE ASSEMBLY
SEVERING THE HELIX ALONG THE TURNS AT ONE EDGE OF THE MANDREL TO FORM A FLEXIBLE INSULATED ELECTRICAL CABLE

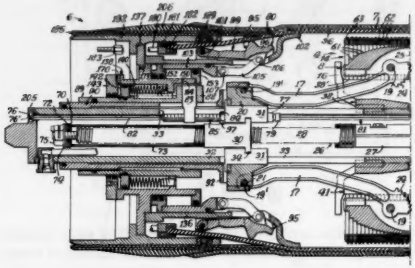
End or intermediate interruption of one or both sides of insulation is effected by selective application of release agent to the area of the conductor to be interrupted before lamination of the conductor between sheets of insulation. Multiple conductor cable is provided by winding conductor from a single supply in a controlled pitch onto a revolving flat mandrel containing sequential bands of release agent and adhesive coated insulation. The outside surfaces of the sheet are similarly covered with said bands to form an assembly which is laminated to provide a sequentially interrupted, flexible conductor cable. The system of the invention provides precision placement of insulation on the conductors, leaving exposed interrupted areas of the conductor in an absolutely clean and undamaged condition.

3,833,444

TIRE BUILDING APPARATUS OF BUILDING TIRES

Edwin E. Mallory, Niles, Mich., assignor to National Standard Company, Niles, Mich.

Filed Jan. 19, 1972, Ser. No. 219,001
Int. Cl. B29h 17/16, 17/18, 17/26
U.S. Cl. 156—400 11 Claims



A tire building apparatus having an expandable drum defined by a plurality of circumferentially arranged deck segments each comprising a plurality of peripherally extending support members movable radially and circumferentially relative to each other to provide supporting surfaces of different radii with adjacent outer end portions of adjacent supporting members being interleaved, and in which the outer end portions of the supporting members are of less cross-sectional area than the cross-sectional area of intermediate portions of the supporting members to provide supporting members of increased length over prior known construction and to provide in the expanded position of the expandable drum a circumferentially extending supporting surface of a maximum length substantially equal to the circumferential length of the interleaved outer end portions of the supporting members and intermediate portions of the supporting members. The expandable drum, as aforenoted, in which the deck segments comprise deck former members for supporting individual supporting members, in which the deck former members have positioning surfaces for engaging radial inward surfaces of the supporting members for disposing the latter in predetermined positions upon expansion and contraction of the expandable drum, and in which the supporting members may or may not be provided with outer end portions of the supporting members as first above described.

A tire building method in which tire beads are disposed inwardly of opposite outer end portions of elongated hollow tire carcass material, displacing the center portion of the tire carcass material to form the same into the true shape of the crown portion of the carcass of a cured tire, and encasing tire beads in the outer end portions of the tire carcass material.

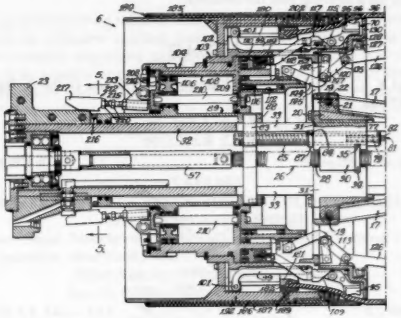
3,833,445

TIRE BUILDING APPARATUS FOR BUILDING TIRES

Edwin E. Mallory, Niles, Mich., and Emerson C. Bryant, South Bend, Ind., assignors to National-Standard Company, Niles, Mich.

Filed Jan. 14, 1972, Ser. No. 217,787
Int. Cl. B29h 17/16, 17/26
U.S. Cl. 156—401 19 Claims

A tire building apparatus about which tire carcass material is laid for formation of the tire carcass material into substantially the form of a completed tire in which the tire beads lie axially inwardly of the circular inner end portions of the sidewall portions of the tire carcass material, in which the sidewall portions of the tire carcass material are reversely curved from the crown of the tire carcass material and the inner end portions of the sidewall portions of the tire carcass material as in a completed or cured tire, and in which suitable means, such as a pair of inflatable bag means are provided, one for effecting turning up the end portions of the tire carcass material to encase the tire beads with the tire carcass material subsequent to formation of the tire carcass material into the aforenoted configuration, and the other for applying sidewall components to the sidewall portions of the tire carcass material after the tire beads have been encased in the end portions of the tire carcass material. The tire building apparatus as aforenoted embodying an expandable and contractable intermediate drum, end drum assemblies at opposite ends of the intermediate drum for supporting tire carcass material embodying tire bead supporting and locking means at the inner ends of the end drums in an arrangement including carrier means for the end drum assemblies and in which the tire bead supporting and locking means may be positioned with respect to the carrier means in equidistant axially spaced apart relation with respect to the transverse centerline of the intermediate drum, and concentrically of the longitudinal axis of the apparatus in which the tire bead supporting and locking means in



operative position lock tire beads inwardly of the ends of the tire carcass material characterized by the association therewith of a pair of the aforenoted inflatable bag means being carried by each of the end drum assemblies in which the tire bead supporting and locking means in operative position lock the inner ends of the dual inflatable bag means together with the outer ends of the tire carcass material at the tire beads together with the tire beads, tire carcass back-up means operative to take the reaction of inflation of ply turn-up bag means to encase tire beads in the end portions after formation of the tire carcass material into the aforenoted configuration and inflation thereafter of sidewall applicator bag means of the pair of inflatable bag means operable together with bag pusher means for said sidewall applicator bag means to apply sidewall components to the tire carcass material. The apparatus as aforenoted in which the drum is pressurized to take the reaction of inflation of the inflatable bag means in the application of the sidewall components, and in which the formed tire carcass material is shaped to conform or substantially conform to that of a cured tire in the bead area.

3,833,446

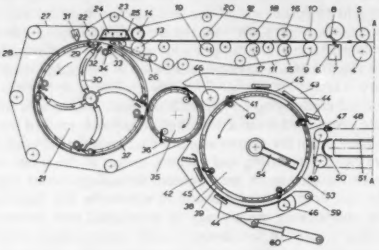
BAG-MANUFACTURING MACHINE

Jean Class, Strasbourg, France, assignor to Les Ateliers de Construction Mecaniques C. & A., Strasbourg, France

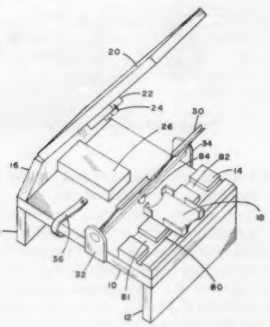
Filed Nov. 22, 1971, Ser. No. 201,065
Claims priority, application France, Nov. 30, 1970, 70.43599; July 16, 1971, 71.26954; Oct. 28, 1971, 71.39448
Int. Cl. B31b 19/60
U.S. Cl. 156—499 10 Claims

A bag-manufacturing machine wherein a tube unwinding from a reel is grasped by a set of rollers, passes into a cutting

device with a notched cutter which reduces the resistance of the tube at the points determined by the length of the bags and permits the tube to be entrained, then each bag is successively pulled off by a train of rollers driven at higher speed, its bottom is welded, it is grasped by the mouth, cooled, and transferred onto a collecting drum which, by means of a set of grippers, grasps a certain number of bags which it deposits in a pack on a moving belt for removal.



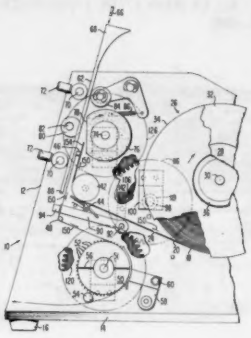
3,833,447
FILM SPLICER
Axel E. Gustafson, 711 S. Summit Ave., Sioux Falls, S. Dak. 57104
Filed Apr. 5, 1973, Ser. No. 348,227
Int. Cl. B31f *5/06*
U.S. Cl. 156—505 **6 Claims**



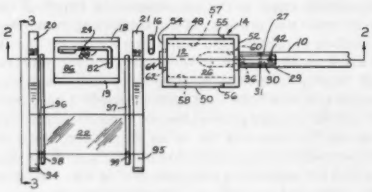
A film splicer in which two pieces of film may be cut so as to exactly abut each other and then taped on both sides while the two ends of the film are clamped firmly in place relative to each other. The two ends of the film are held firmly in clips which can be pivoted so as to carry the two ends of the film over a cutting block and also into a splicing well where the tape is applied. Provision is made to store spare tabs of splicing tape on the bottom of the device.

3,833,448
APPARATUS FOR AUTOMATICALLY ATTACHING A MAGNETIZABLE, MACHINE READABLE STRIPE TO A COMMERCIAL DOCUMENT
Robert R. Gates, Rochester, and Dunham B. Seeley, Fairport, both of N.Y., assignors to Burroughs Corporation, Detroit, Mich.
Filed Sept. 8, 1972, Ser. No. 287,336
Int. Cl. B44c *3/00*; **B32b** *35/00*
U.S. Cl. 156—541 **9 Claims**

The present invention relates to a magnetic patch attaching device wherein a continuous roll or reel of adhesively backed magnetic stripes are arranged so that introduction of a document into the machine by means of which the stripe is to be attached permits the reel of tape to be advanced in such manner that an individual stripe is peeled away from the backing tape and applied to the document while the latter is simultaneously withdrawn from the apparatus, the tape being pressure bonded to the surface of the document during withdrawal of the document, leaving the apparatus available for the introduction of the next document.



3,833,449
AUTOMATIC COVERSLIPPER APPARATUS
Leighton Clifford Johnson, Edwardsburg, Mich., assignor to Miles Laboratories, Inc., Elkhart, Ind.
Filed Oct. 4, 1972, Ser. No. 295,007
Int. Cl. B32b *31/12*; **G02b** *21/34*
U.S. Cl. 156—556 **5 Claims**

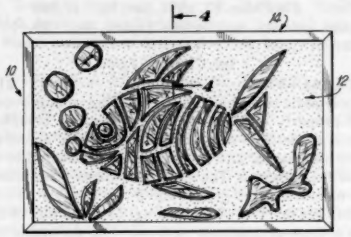


Apparatus is described for applying a coverslip to a microscope slide wherein a coverslip is dispensed from a magazine, a predetermined amount of liquid is applied to a face of the coverslip, a microscope slide is positioned in close proximity to such face of the coverslip, and a portion of the coverslip is moved toward the microscope slide so that the liquid comes into contact with the slide and bridges a portion of the space between the coverslip and the slide. Capillary action of the liquid then acts to draw the coverslip against the slide. The liquid fills the space between the coverslip and slide and capillary action maintains all the liquid within such capillary space.

3,833,450
SIMULATED STAINED GLASS IN CONCRETE ART ASSEMBLY
Charles W. Powell, 277 E. 50th St., New York, N.Y. 10022
Filed Aug. 18, 1972, Ser. No. 281,934
Int. Cl. B44f *7/00*
U.S. Cl. 161—5 **4 Claims**

A stained glass in concrete art assembly including a plastic panel having glass texture simulating surface projections

therein which are rendered visible when the back surface of the projections are painted with a coloring medium and which contribute to providing a simulated appearance of authentic



stained glass to the plastic panel. The front side of the plastic panel is painted with sand paint thereby providing a simulated appearance of concrete.

3,833,451

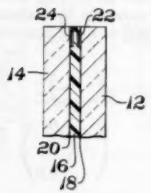
A LAMINATED ELECTROCONDUCTIVE WINDOW

William E. Wagner, Verona, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed July 3, 1972, Ser. No. 268,381

Int. Cl. B32b *1/04, 17/04;* **H05b** *3/06*

U.S. Cl. 161—45 **13 Claims**



A laminated, electrically heated window comprising accordion-folded bus bars making surface to surface contact with a transparent electroconductive film on a surface of a rigid transparent panel to insure intimate sliding contact between the bus bars and the film when the panel and the bus bars expand or contract at different rates as the temperature of the window changes during use.

A specific embodiment of the present invention suitable for an automobile windshield comprises a laminated, electroconductive window comprising one or two glass sheets, a layer of transparent, electroconductive coating on the inner surface of one or both of said glass sheets, a layer of plastic interlayer material, and a pair of accordion-folded bus bars extending along the opposite side edges of the interlayer material. Each bus bar has one surface bonded to a surface of said layer of transparent interlayer material that faces an electroconductive coating and the other surface of the folded bus bars is in sliding surface to surface contact with said coating. The folded bus bars flex in response to differences in expansion and contraction between the layer of interlayer material and the coated glass and maintain good electrical contact with the coating due to the surface to surface contact therebetween. Intimate surface to surface contact is obtained during lamination of the glass to the layer of plastic interlayer material.

3,833,452

SELF-ADHERING LABEL

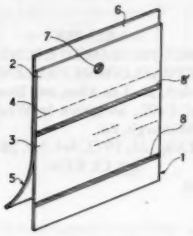
Hubert Boucris, Vigneux, France, assignor to Compagnie Generale D'Automotisme, Paris, France

Division of Ser. No. 2,093, Jan. 12, 1970, Pat. No. 3,695,981. This application July 11, 1972, Ser. No. 270,872

Claims priority, application France, Jan. 10, 1969, 69.00299

Int. Cl. B32b *3/10*

U.S. Cl. 161—112 **7 Claims**



A self-adhering label having a protective covering member over an adhesive coating thereon and an aperture in one of two readily separable portions thereof capable of carrying data in written or coded form and a dispenser of such labels capable of automatically dispensing labels one at a time and removing the protective covering member prior to application of the label to an object.

3,833,453

NONFLAMMABLE, FIBER-FILLED, COLD-FORMABLE THERMOPLASTIC SHEET

Leon Segal, Morristown, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Aug. 4, 1971, Ser. No. 172,348

Int. Cl. B32b *17/04;* **C08f** *37/00, 45/10*

U.S. Cl. 161—151 **6 Claims**

Glass fiber-reinforced ethylene chlorotrifluoroethylene composite sheets are formable into shaped objects in a mold at ambient temperatures solely by moderate preheating of the sheet outside of the mold. This polymer comprising a high molecular weight, tough copolymer of ethylene and chlorotrifluoroethylene in an approximate 1:1 mol ratio is inherently nonflammable in air. A glass fiber of controlled length increases the mechanical properties of the composite structure and allows fabrication into suitable shapes without detracting from the nonflammable properties of the polymeric composite.

3,833,454

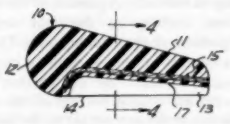
REINFORCED FOAM PLASTIC SEAT BUN AND METHOD OF MOLDING SAME

Jere B. Ambrose, Pontiac, Mich., assignor to Northern Fibre Products Company, Birmingham, Mich.

Filed May 11, 1972, Ser. No. 252,486

Int. Cl. B32b *3/26;* **A47c** *7/02*

U.S. Cl. 161—159 **2 Claims**



A molded foam plastic seat bun formed into a cushion shape and having a lower face for resting upon a spring support

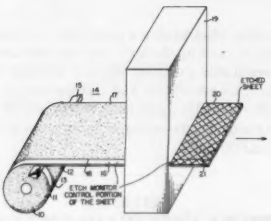
means, with a preformed, thin sheet of non-woven, randomly oriented fibrous fabric formed of linearly oriented, polypropylene fibers bonded together in relatively spaced apart relationship to provide randomly located openings between the fibers through the sheet, and the sheet being stretch resistant in its planar directions, with the sheet being embedded within the lower face portion of the bun a slight distance above the lower face surface and with foam plastic material extending through the sheet openings and forming a thin coating over its lower face.

3,833,455

MULTICOLORED ETCHED POLYTETRAFLUOROETHYLENE SHEET

Girard B. Rosenblatt, Jr., Los Altos, and Donald C. Wold, Sunnyvale, both of Calif., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 23, 1972, Ser. No. 283,256
Int. Cl. B23b
U.S. Cl. 161—164 **6 Claims**



An etched polytetrafluoroethylene sheet is made having at least one non-white color pigmented portion and at least one unpigmented etch monitor control portion.

3,833,456

AREA DIVARICATION ADHESIVE MEANS

Charles F. Reed, and David T. Komendat, both of Painesville, Ohio, assignors to Avery Products Corporation, San Marino, Calif.

Continuation of Ser. No. 50,743, June 29, 1970, abandoned. This application Mar. 5, 1973, Ser. No. 338,374
Int. Cl. C09j *7/02*
U.S. Cl. 161—167 **2 Claims**

A flexible web product is disclosed which comprises a laminate having a face web and a backing web for adhesively joining portions of a substrate. The face web has a pressure-sensitive coating on one side. A portion of the total area of the pressure-sensitive coating on the face web contacts a releasecoated portion of the backing web. The backing web has an adhesive coating on its other side so that it may be permanently affixed to the substrate. The portion of the face web contacting the release-coated portion of the backing web is divaricated relative to the remainder of the backing web and, while integral with the remainder of the face web, is applied to the same or a different surface for joining purposes. Also disclosed is a flexible web product which may be used for identification purposes for inventory control and the like.

3,833,457

POLYMERIC COMPLEX COMPOSITE

Teruyuki Misumi, Yokohama; Yutaka Shimodoi, and Kazushi Ochi, both of Osaka, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Mar. 17, 1971, Ser. No. 125,366
Claims priority, application Japan, Mar. 20, 1970, 45-23080
Int. Cl. B32b *33/00*
U.S. Cl. 161—170 **21 Claims**

A polymeric complex composite having an improved hydrophilic property is presented. The polymeric complex composite is made from a polymeric substrate of a conventional polymeric material and a coating tightly adhered to the surface of the substrate. The coating contains 900 millimoles or more of sulfonic acid groups and 5 millimoles or more of sulfone bridges per 1 kg of the coating. The structure of the coating is a three-dimensional network. The polymeric complex composite has an excellent anti-electrostatic property as well as other improved properties such as excellent water absorption, soil release, dyeing properties and the like. Such improved properties are not temporary but durable. The polymeric complex composite is suitable for uses for various articles, particularly for fibers and films.

3,833,458

METAL-POLYMER COMPOSITES AND METHODS FOR THEIR PREPARATION

Clarence R. Bierman, and John D. Welks, both of Barrington, Ill., assignors to M & T Chemicals Inc., Greenwich, Conn.

Filed Jan. 3, 1972, Ser. No. 215,115
Int. Cl. B32b *15/04*; **C09j** *5/00*
U.S. Cl. 161—216 **6 Claims**

Strong durable bonds are formed between metals and vinyl chloride-containing polymers by maintaining at a surface of the metal a layer of polymer that contains pendant carboxylic acid

groups. One surface of the polymer layer has been modified by oxidation or chemical etching agents. Between the modified surface of the polymer layer and the vinyl chloride-containing polymer is an adhesive comprising a mixture of a natural or synthetic rubber and a phenolaldehyde resin. Heating the composite above 120°C. for a short period of time yields a unitary bonded structure.

3,833,459

FELT BACKING FOR VINYL FLOOR COVERING HAVING A BINDER COMPRISED OF SYNTHETIC RUBBER LATEX AND A REACTIVE THERMOSET RESIN

Donald C. Winters, Plainfield, N.J., assignor to Congoleum-Industries, Inc., Kearny, N.J.

Division of Ser. No. 13,154, Feb. 20, 1970, abandoned. This application Oct. 29, 1971, Ser. No. 194,033
Int. Cl. D21h *5/18*
U.S. Cl. 162—155 **2 Claims**

An vinyl floor covering having a felt backing sheet made of cellulosic or chrysotile asbestos fibers saturated with a binder comprising 36–74% synthetic rubber latex and 17–60% reactive resin of the melamine or urea formaldehyde type to which is laminated a vinyl wear layer.

3,833,460
DRY METHOD FOR SEPARATING PAPER CONSTITUTENTS FOR RECOVERY AND RECYCLING

Fred D. Iannazzi, Andover; John W. Rafferty, Topsfield; Donald B. Sparrow, and Richard Strauss, both of Lexington, all of Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.

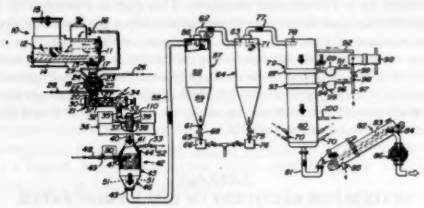
Filed Sept. 27, 1972, Ser. No. 292,662
Int. Cl. D21c *5/02*
U.S. Cl. 162—5 **16 Claims**

A method for separating mixtures of waste paper into two components using the differences in strength and/or water-receptivity characteristics of the two components which are typically the liner board and corrugated medium of corrugated paper or a mixture of magazines and newsprint. In separation, the material of the paper mixture is cut into pieces ranging in size from about one to six inches in either dimension, treated with a debonding agent and then subjected to differential size reduction wherein one of the mixture components is reduced to small pieces, e.g., one-quarter inch in either dimension, while the other remains in pieces of essentially the same size. Separation of the two distinctly different sized components is then effected.

3,833,461
CYCLONIC DIGESTER SYSTEM AND PROCESS

Maurice D. Woodruff, Springfield, Ohio, assignor to The Bauer Brothers Company, Springfield, Ohio

Filed May 17, 1971, Ser. No. 143,790
Int. Cl. D21c *7/06*
U.S. Cl. 162—19 **37 Claims**



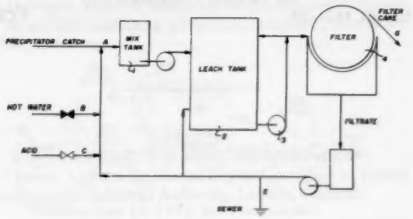
The invention system and process provides for a cyclonic digesting of fibrous pulp in a pressurized environment. It utilizes a double revolving disc refiner which reduces raw wood or like fibrous content material into fibers and fiber bundles. It features the use of a plurality of chambers in which the fiber content, as discharged from the disc refiner, is successively subjected to a vortex flow pattern under the influence of conditioning fluid such as a cooking liquor. The invention provides in this manner that lignin and other non-fibrous materials which attach and normally tend to coat and cling to the fibers are substantially solubilized and/or dissipated. The fibers resulting are not only simply and economically made individual but of such nature as to facilitate the production of high quality paper products, including, in particular, an improved Kraft.

3,833,462
PROCESS OF REMOVING SODIUM CHLORIDE FROM KRAFT PULPING PROCESS CHEMICAL RECOVERY SYSTEMS

Walick A. Moy, Nanaimo, and Garrick E. Styan, North Burnaby, British Columbia, both of Canada, assignors to MacMillan Bloedel Limited, Vancouver, British Columbia, Canada

Filed Mar. 15, 1971, Ser. No. 124,003
Int. Cl. D21c *11/06*
U.S. Cl. 162—29 **13 Claims**

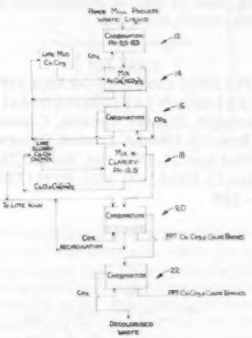
A process of removing sodium chloride which has accumulated in the precipitator catch of the kraft pulping process chemical recovery systems without undue loss of sodium sulfate and other useful chemicals. The process basically comprises leaching precipitator catch, which contains sodium sulfate, sodium carbonate, sodium chloride and organic material, with sufficient aqueous sulfuric acid solution to produce a leached slurry of pH 3–6, thereby converting sodium carbonate to sodium sulfate and recovering sodium chloride.



3,833,463
METHOD OF DECOLORIZING WASTE PROCESS LIQUID DISCHARGED BY A PAPER MILL

Hardy C. Croom, Valdosta, Ga., assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Oct. 26, 1972, Ser. No. 301,132
Int. Cl. D21c *11/00*
U.S. Cl. 162—29 **13 Claims**

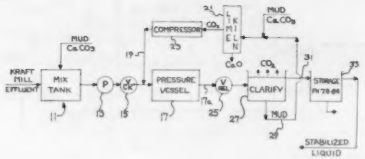


Discolored process waste liquid from a paper mill containing ecologically undesirable color bodies is subjected to a sequence of process steps serving, in aggregate, to reduce and/or eliminate the color bodies, said sequence of steps including (1) a carbonation of the waste liquid to adjust the pH to approximately neutral, (2) an addition of lime mud (principally calcium carbonate) which in the presence of carbon dioxide tends to form soluble calcium bicarbonate, (3) an optional secondary carbonation to counteract lime mud alkalinity and promote high calcium concentration, (4) a mixing clarifier addition of a slurry of lime (principally calcium oxide and calcium hydroxide), raising the pH and precipitating calcium carbonate, clarifier bottom slurry being recycled to lime slurry and bled to kiln, and (5) a carbonation of clarifier effluent with carbon dioxide to lower the pH and to react with remaining calcium to form and remove calcium carbonate and conjoint agglomeration of residual color bodies, yielding an essentially color-free effluent. The process also envisions recycling of various streams, thereby providing continuousness of the process.

3,833,464
METHOD OF DECOLORIZING PAPER MILL EFFLUENT LIQUID

Ormond E. Rolfe, Valdosta, Ga., assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Feb. 16, 1973, Ser. No. 333,285
Int. Cl. D21c *11/00*; D21f *1/82*
U.S. Cl. 162—29 7 Claims

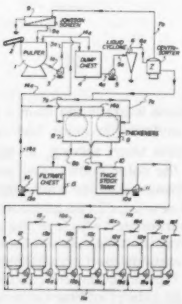


Effluent liquid normally discharged by paper mills is ecologically undesirable for return to streams, lakes or the like by reason of the presence of color-imparting substances, e.g., color bodies, desirably removed by a process which includes mixing therewith an excess of calcium carbonate, followed by a combination at a pressure above atmospheric with a fluid rich in carbon dioxide, serving to convert the calcium carbonate to soluble calcium bicarbonate which is in turn discharged to atmospheric pressure whereby the calcium bicarbonate reconverts to calcium carbonate precipitate, said precipitate attracting and sweeping said color-imparting color bodies; the precipitate and color bodies being readily separable from the color-free effluent which may be returned to the source, stream, river or lake or reintroduced as fresh water into the pulping process as needed.

3,833,465
SINGLE PULPING SYSTEM FOR MULTIPLE PULP STOCKS USED IN PAPERBOARD MACHINE

Hubert J. Campbell, Trenton, Ontario, Canada, assignor to The Miller Bros. Co. Limited, Trenton, Ontario, Canada

Filed Apr. 27, 1971, Ser. No. 137,788
Int. Cl. D21d *5/00, 5/28*; D21f *11/04*
U.S. Cl. 162—129 5 Claims



Various pulp stocks which are to be used in the formation of various layers of multilayered paperboard are prepared by sequential passage of each stock through a single pulping system which includes a pulper, a liquid cyclone, a centrisorter, and pulp thickeners, prior to storage in separate storage tanks. Stocks from the different tanks can be withdrawn and blended in multiple blend chests (with appropriate additive chemicals also being added to the blend chests) for passage to separate stock drop chests and formation points on the paperboard machine.

3,833,466
MANUFACTURE OF HARDWOOD PRINTING PAPER

Eugene F. McCarty, Salisbury Mills, N.Y., assignor to Aktiebolaget Svenska Flaktfabriken, Stockholm, Sweden

Filed June 15, 1971, Ser. No. 153,381
Int. Cl. D21f *11/00*
U.S. Cl. 162—142 8 Claims

Paper capable of being converted to printing paper and capable of being processed through high speed printing machines is manufactured from 100 percent or near 100 percent hardwood groundwood pulp by a process which includes drying the wet pulp web to below 15 percent by weight moisture under substantially no physical restraint, the drying process imparting stretch and strength to the paper without causing cockling.

3,833,467
MODIFICATION OF CLAY TO IMPROVE ELECTROSTATIC DEPOSITION

Lester L. Spiller, Indianapolis, Ind., assignor to Ransburg Electro-Coating Corp., Indianapolis, Ind.

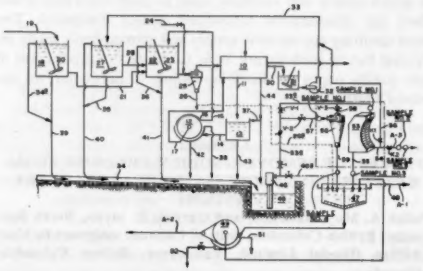
Continuation of Ser. No. 768,342, Oct. 17, 1968, abandoned. This application Apr. 26, 1973, Ser. No. 354,637
Int. Cl. D21d *3/00*
U.S. Cl. 162—181 D 5 Claims

Dry clay is electrostatically deposited on wet paper as it is formed on a Fourdrinier machine. This clay is coated with a cationic surface active agent and especially a dialkyl dimethyl ammonium chloride in order to minimize the formation of clay clusters which adhere to the electrostatic equipment and which drop off in the form of slugs to mar the paper. Pretreatment of the clay with a mild alkaline agent such as sodium carbonate causes the cationic agent to be more effective and the treatment to be more durable.

3,833,468
SYSTEM FOR RECOVERY OF FIBER FROM PAPER MILL EFFLUENT, INCLUDING A SIEVE BEND SCREEN

Arthur Boniface, West Redding, Conn., assignor to Dorr-Oliver Incorporated, Stamford, Conn.

Continuation of Ser. No. 175,498, Aug. 27, 1971, abandoned, which is a continuation-in-part of Ser. No. 834,168, June 17, 1969, abandoned. This application Apr. 26, 1973, Ser. No. 354,711
Int. Cl. D21f *1/66*
U.S. Cl. 162—264 11 Claims



The improvement in the operation of a paper mill, whereby re-usable long fibers are recoverable from mill waste effluent, wherein the fibers are entrapped in contaminating impurities

comprising coarse particles along with fibrous-and-non-fibrous fines. The present improvmeent provides a fiber recovery section whereby a suspension of the entrapped fibers is supplied under pressure to a sieve bend type of screen, effecting the decontamination of the fibers, and delivery of recovered fibers suitable for paper making.

3,833,469

PROCESS FOR THE PRODUCTION OF TECHNETIUM-99M FROM NEUTRON IRRADIATED MOLYBDENUM TRIOXIDE

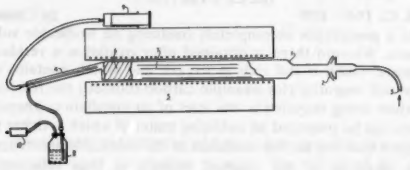
John Robson, Stanwell Tops, New South Wales, Australia, assignor to Australian Atomic Energy Commission, New South Wales, Australia

Filed Aug. 30, 1972, Ser. No. 284,868

Claims priority, application Australia, Aug. 31, 1971, 6121/71

Int. Cl. C01f *13/00, 15/00*

U.S. Cl. 176—16 **10 Claims**



A process for producing solutions containing radioactive technetium-99m comprises irradiating molybdenum oxide in a nuclear reactor, heating the powdered product in a tube in a flowing gas stream at a temperature in the range 700°–950°C, passing the vaporised Tc-99m compound together with any vaporised molybdenum compound through a filter held at a temperature in the range 300°–700°C, condensing the Tc-99m compound in a condenser, taking-up the Tc-99m compound in a liquid, and removing the liquid containing the Tc-99m compound in a sterile container.

3,833,470

METHOD OF MAKING FUEL AND FERTILE ELEMENTS FOR NUCLEAR-REACTOR CORES

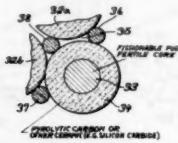
Erno Gyarmati, and Hubertus Nickel, both of Julich, Germany, assignors to Kernforschungsanlage Julich Gesellschaft mit beschrankter, Haftung, Julich, Germany

Division of Ser. No. 49,056, June 23, 1970, abandoned. This application May 3, 1972, Ser. No. 250,032

Claims priority, application Germany, June 27, 1969, 1932567

Int. Cl. G21c *3/70, 3/26, 21/02*

U.S. Cl. 176—68 **3 Claims**



Fissionable-fuel or fertile elements for the core of a nuclear reactor, especially a reactor of the gas-cooled type, wherein the fuel or fertile material is introduced into graphite shells in the form of coated particles and a pyrolytically decomposable carbon-containing or silane gas is passed upwardly through the shell while the mass therein is heated by displacing an induction-furnace core downwardly around the graphite shell thereby bonding the coated particles together with pyrolytic carbon, silicon carbide or zirconium carbide being formed in situ to yield a coherent mass with a porosity of, say, 10 to 25 percent. The gas is preferably a mixture of one or more inert gases (nitrogen, argon or helium) with one or more hydrocarbons or carbon-containing gases (e.g., methane, acetylene, benzene, or silanes).

3,833,471

NUCLEAR REACTOR FUEL ELEMENT GRID

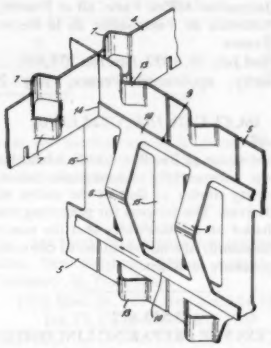
John Chetter, Lytham-St. Annes, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed June 26, 1972, Ser. No. 266,067

Claims priority, application Great Britain, July 7, 1971, 32003/71

Int. Cl. G21c *3/34*

U.S. Cl. 176—78 **1 Claim**



A spacer grid comprising a grid structure formed from intersecting strip members defining cells which are penetrated by fuel pins bearing against rigid stops projecting inside the cells and spring locating members in the form of bow springs which extend longitudinally in the cells of the grid structure to hold the fuel pins against the rigid stops in the cells, the bow spring members of each line of cells extending in one direction across the grid structure having their corresponding ends interconnected by common longitudinal bridging strips to form a ladder spring assembly.

3,833,472

PROCESS FOR ISOLATING OLEANDRIN FROM NERIUM ODORUM

Tatsuo Yamauchi, Fukuoka, Japan, assignor to Hisamitsu Pharmaceutical Company, Inc., Tosu-City, Japan

Filed Sept. 25, 1972, Ser. No. 291,529

Claims priority, application Japan, Oct. 3, 1971, 46-77254; Oct. 3, 1971, 46-77255; May 8, 1972, 47-45697

Int. Cl. C12b

U.S. Cl. 195—3 **3 Claims**

Undried leaves of Nerium odorum are subjected to a heat treatment under dry or wet conditions or incubation under heating to isolate oleandrin therefrom, which is then extracted with a solvent to obtain oleandrin of a high purity.

3,833,473

METHOD FOR PRODUCING L-ARGININE BY FERMENTATION

Koji Kubota, Kanagawa; Takiko Onoda, Tokyo; Hirotaka Kamijo; Fumihiro Yoshinaga, both of Kanagawa, and Shinji Okumura, Tokyo, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed June 19, 1972, Ser. No. 264,317

Claims priority, application Japan, June 21, 1971, 46-44619The portion of the term of this patent subsequent to Mar. 27, 1990, has been disclaimed.

Int. Cl. C12d *13/06*

U.S. Cl. 195—29 **2 Claims**

Extracellular L-arginine is produced in commercially useful amounts by cultures of Microbacterium ammoniaphilum FERM-P 976, a mutant capable of growth on a culture medium containing more than 1,000 μg/ml 2-thiazolealanine, a growth inhibitor for the parent strain which does not produce L-arginine.

3,833,474

ASPOROGENIC PROTEASE-PRODUCING STRAINS OF BACILLUS SUBTILIS

Jean-Paul Aubert, Montrouge; Robert Longin, Meudon La Foret, and Jacqueline Millet, Paris, all of France, assignors to Agence Nationale de Valorisation de la Recherche (Anvar), Paris, France

Filed July 25, 1972, Ser. No. 275,069

Claims priority, application France, July 28, 1971, 71.27671

Int. Cl. C12k *1/00;* **C12d** *13/10*

U.S. Cl. 195—65 **3 Claims**

A new mutant strain of Bacillus subtilis which has the property of being substantially asporogenic while showing proteolytic activity similar to that of the native strain from which it was derived. The process for preparing the new mutant strain is based on the discovery that the non-sporulated cells of *Bacillus subtilis* are not resistant to chloroform vapor whereas the spores are resistant.

3,833,475

PROCESS FOR PREPARING LINCOMYCIN

Fritz Reusser, and Alexander D. Argoudelis, both of Portage, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Apr. 23, 1973, Ser. No. 353,379

Int. Cl. C12d *9/00*

U.S. Cl. 195—80 R **8 Claims**

Microbiological process for preparing the antibiotic lincomycin at high incubation temperatures using the micro-organism *Streptomyces espinosus* and biotypes thereof.

3,833,476

PROCESS FOR PREPARING CHLORAMPHENICOL ANALOGUES

Takeo Suzuki; Fusao Tomita; Haruo Honda; Kunikatsu Shirahata; Takashi Deguchi, all of Tokyo, and Fumio Kato, Shizuoka, all of Japan, assignors to Kyowa Hakko Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Continuation-in-part of Ser. No. 137,696, April 26, 1971, abandoned. This application May 21, 1973, Ser. No. 362,625

Int. Cl. C12d *13/00*

U.S. Cl. 195—96 **7 Claims**

The present invention relates to a process for preparing analogues of chloramphenicol, characterized by culturing a microorganism capable of producing D-threo-2-acetamido-1-p-nitrophenyl-1,3-propanediol (hereinafter designated as Substance C), and the derivatives of D-threo-2-propionamido-1-p-nitrophenyl-1,3-propanediol (hereinafter designated as Substance A), D-threo-2-isobutyramido-1-p-nitrophenyl-1,3-propanediol (hereinafter designated as Substance B) and Substance C of which 3-hydroxy group is substituted by O-acetyl group, under aerobic conditions in a culture medium containing assimilable carbon sources to form and accumulate said analogues of chloramphenicol therein and isolating and recovering the same therefrom, said microorganism belongs to the genera *Corynebacterium*.

These substances A, B and C are the derivatives of D-threo-2-amino-1-p-nitrophenyl-1,3-propanediol of which 2-amino group is substituted by propionamide, isobutyramide and acetamide respectively.

3,833,477

PROCESS AND INSTALLATION FOR THE OXIDATION OF AN OXIDISABLE SUBSTANCE

Jean-Renaud Brugerolle, Paris, and Pierre Petit, Chatenay, both of France, assignors to L'Air Liquid, Societe Anonyme Pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

Filed Aug. 4, 1972, Ser. No. 278,087

Claims priority, application France, Aug. 10, 1971, 71.29152

Int. Cl. C12b *1/00*

U.S. Cl. 195—109 **26 Claims**

In a process for incompletely oxidizing an oxidisable substance, wherein there is obtained after oxidation a residual mixture which is still rich in oxygen and which contains at least one impurity (for example carbon dioxide) the residual mixture being recycled to the inlet of an installation wherein there can be prepared an oxidizing material which is richer in oxygen than the air, for oxidation of the oxidizable substance. The impurity of the residual mixture is thus selectively eliminated in the enrichment installation. The invention can be applied inter alia to the biochemical oxidation of a hydrocarbon, taking place during the aerobic fermentation thereof, for the production of proteins.

3,833,478

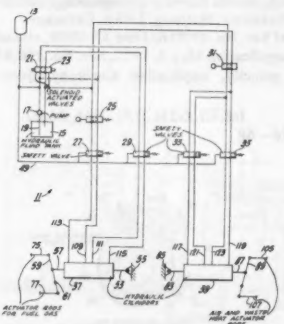
REVERSING MECHANISM FOR COKE OVEN BATTERY

Linwood G. Tucker, Pittsburgh, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 103,306, Dec. 31, 1970, abandoned, which is a continuation-in-part of Ser. No. 885,678, Dec. 17, 1969, abandoned. This application Jan. 29, 1973, Ser. No. 327,595

Int. Cl. C10b *1/06, 21/10*

U.S. Cl. 202—151 **7 Claims**



A coke oven battery reversing mechanism comprises a repeat-cycle timing device that signals the commencement of the sequence of movement of cylinder-piston assemblies to initiate the 1–4,5 reverse, and also the 2,3 reverse of the coke oven battery. Two tandem cylinder-piston assemblies are con-

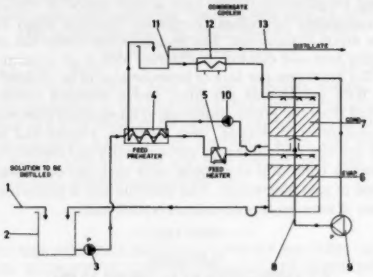
nected to the actuating rods for the air, waste heat valves and the fuel gas valves, hydraulic power being obtained from an accumulator.

3,833,479

METHODS AND MEANS FOR DISTILLATION OF LIQUIDS

Carl Otto Fredriksson, Goteborg, Sweden, assignor to Nordnero AB, Goteborg, Sweden

Filed Sept. 5, 1972, Ser. No. 286,257
Int. Cl. B01d *3/34, 3/28, 3/00, 1/16, 3/08*
U.S. Cl. 202—235 **2 Claims**



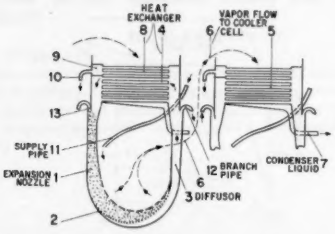
A method for distillation of liquids comprises the use of two separate liquid circulation systems. The liquid of the first system passes from a tank through a heat exchanger and is then brought to an evaporator there meeting a counter running, colder gas flow and is therefrom returned to the tank. The liquid of the second system passes a condenser and meets there the same counter running gas flow, which then has passed the evaporator, this liquid receiving heat through the gas flow, which heat is emitted to the heat exchanger.

3,833,480

DISTILLATION OF LIQUID SOLUTIONS EXPANDED ALONG A CURVILINEAR SURFACE

Rene Bidard, Paris, France, assignor to Compagnie Electro-Mecanique, Paris, France

Continuation of Ser. No. 133,115, April 12, 1971, abandoned, which is a division of Ser. No. 802,106, Feb. 25, 1969, Pat. No. 3,619,379. This application Sept. 4, 1973, Ser. No. 393,817
Claims priority, application France, Mar. 4, 1968, 68.142244
Int. Cl. B01d *3/06*
U.S. Cl. 203—88 **6 Claims**



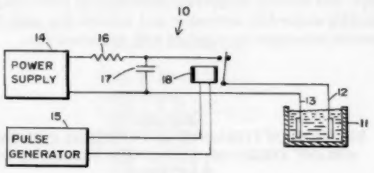
Method for distillation of a liquid, particularly sea water, in which the liquid flows thru a plurality of stages each of which includes at least one cell through which the liquid flows and in which steam produced by evaporation is separated from the unevaporated liquid in order to obtain a condensate. The method employs one or more expansion nozzles in each cell through which the liquid expands and is thus converted partly into its vapour phase as a result of the reduction in pressure. The composite liquid and gaseous fluid passes along a curved flow surface which, as a result of the centrifugal forces created effects separation of the liquid from the steam. The steam is then condensed and the remaining liquid is sent to a diffusor in which its speed is transformed into pressure, delivering thus a pressure greater than the one at the inlet of the expansion nozzle. The liquid passes then through a heat exchanger and may then either be re-cycled through the cell or passed to a warmer or cooler cell.

3,833,481

ELECTROFORMING NICKEL COPPER ALLOYS

Roger A. Olson, Amery, Wis., and Pat F. Mentone, St. Paul, Minn., assignors to Buckbel-Mears Company, St. Paul, Minn.

Filed Dec. 18, 1972, Ser. No. 316,278
Int. Cl. C23b *7/00, 5/34*
U.S. Cl. 204—3 **9 Claims**



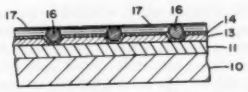
A process for electroforming a nickel copper alloy by utilization of a nickel anode in an electrolyte solution containing copper, nickel and boric acid.

3,833,482

MATRIX FOR FORMING MESH

Dan Jacobus, New Brighton, Minn., assignor to Buckbee-Mears Company, St. Paul, Minn.

Filed Mar. 26, 1973, Ser. No. 344,980
Int. Cl. C23b *7/00*; **B01k** *1/00*
U.S. Cl. 204—11 **5 Claims**



A reusable sandwich type matrix for the formation of fine mesh comprising a base plate, a photoresist defining the mesh pattern, and a silica coating encapsulating the top of the base plate and the photoresist.

3,833,483

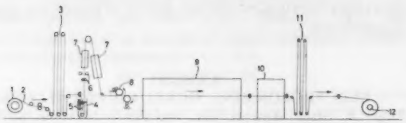
PROCESS FOR PRE-TREATING CAN MATERIALS FOR LACQUERING

Akimi Umezono; Takao Saito, and Ryousuke Wake, all of Himeji, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Mar. 7, 1973, Ser. No. 338,957
Claims priority, application Japan, Mar. 10, 1972, 47-24558
Int. Cl. C23f *17/00*
U.S. Cl. 204—38 E **1 Claim**

The present invention comprises a process for pre-treating a steel strip intended for can making in the lacquring line in an

electrolysis tank containing as the treating solution more than 50g/l of anhydrous chromic acid and sulfate ions in the amount of 2 to 5% of the anhydrous chromic acid, electrolytically treating the steel strip less than 0.2 sec. at a current density of 50 A/dm² on the downward path in the tank, then dissovling the excessive part of attached hydrated oxide of



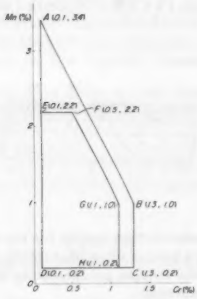
chromium on the upward path and immediately applying lacquer. The chemical treatment process of the present invention is very easily connected to the lacquring line for steel strips, and thereby lacquered can materials possessing excellent anti-under-film corrosion and suitable for cans for carbonated beverages are supplied with decreased cost.

3,833,484

METHOD OF FORMING AN INTEGRAL COLORED ANODIC OXIDE ON ALUMINUM PRESSURE DIE CASTINGS

Kiyomi Yanagida, and Isao Satake, both of Nagoya, Japan, assignors to Sumitomo Chemical Company Limited, Osaka, Japan

Filed Feb. 18, 1972, Ser. No. 227,593
Claims priority, application Japan, Feb. 24, 1971, 46-9521; May 18, 1971, 46-33823; May 19, 1971, 46-34264
Int. Cl. C23b *9/02*
U.S. Cl. 204—29 **9 Claims**



An integral colored anodic oxide film free from irregular patterns of metal flow, seams and cold shuts can be formed on die castings by subjecting the surface of pressure die castings of an aluminum alloy comprising 0.1 – 1.3 percent by weight of chromium, 0.2 – 3.4 percent by weight of manganese, said chromium and manganese being present in the amounts which are within the area of quadrilateral ABCD shown in the FIGURE, up to 0.3 percent by weight of impurities and the balance of aluminum, to roughening and brightening treatments, and thereafter subjecting thus treated products to anodizing treatment. Mechanical strength and castability of the alloy is further improved by addition of cobalt or zinc.

3,833,485

ELECTROPLATING CHROMIUM AND CHROMIUM ALLOYS

John Cooper Crowther, 20 St. Leonard's Oval, and Roger Frederick Ashpole, 62 Beckwith Rd., both of Harrogate, England

Filed Feb. 22, 1972, Ser. No. 228,083
Claims priority, application Great Britain, Feb. 23, 1971, 05270/71
Int. Cl. C23b *5/32, 5/06*
U.S. Cl. 204—43 R **21 Claims**

An improved process for electroplating chromium and chromium alloys from a substantially aqueous electrolyte containing trivalent chromium ions as the source of chromium and containing oxyanions (preferably sulphate ions) as the major anion component. The improvement comprises incorporating into said electrolyte chlorine ions in an amount of at least 0.1 gram ions per litre or bromine ions in an amount of at least 0.05 grams ions per litre, and a nitrogen compound selected from the group consisting of ammonium compounds, hydroxylamine, hydrazine, urea, aliphatic amines and heterocyclic amines; and utilizing a carbon anode and electroplating chromium from said electrolyte with said carbon anode immersed in said electrolyte. The chlorine ion is preferred and the use of ammonium compounds is preferred.

3,833,486

CYANIDE-FREE ELECTROPLATING

Fred I. Nobel, Roslyn, and Lazaro C. Yoen, Brooklyn, both of N.Y., assignors to Lea-Ronal, Inc., Freeport, N.Y.

Filed Mar. 26, 1973, Ser. No. 345,041
Int. Cl. C23b *5/02, 5/18, 5/46*
U.S. Cl. 204—44 **3 Claims**

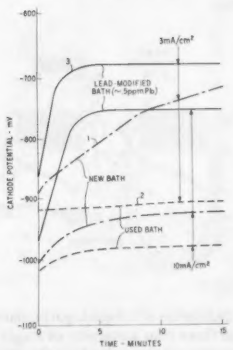
Improved cyanide-free aqueous electroplating baths for plating metals, the baths containing water soluble phosphonate chelating agents combined with at least one chelatable metal ion and containing as an additive at least one strong oxidizing agent, and electroplating processes employing said baths. Additional materials may also be added for further improvements.

3,833,487

ELECTROLYTIC SOFT GOLD PLATING

Horst Alfred Reinheimer, Reading, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 22, 1972, Ser. No. 317,600
Int. Cl. C23b *5/28*
U.S. Cl. 204—46 G **11 Claims**



Characteristics of soft gold plating produced by electrolysis are improved by adding trace amounts of lead to the gold plat-

ing solution and by replenishing such content during use. Such characteristics include improved brightness and uniformity of deposits, better defined crystallinity of deposits, enlarged current density range, and extended solution life. Lead content generally less than about 1 ppm, based on the solution, does not affect purity of gold deposit as measured by ordinary analytical techniques.

3,833,488

GOLD ELECTROPLATING BATHS AND PROCESS

Maurice Bick, South Orange, and Jean A. Lochet, Metuchen, both of N.J., assignors to Auric Corporation, Newark, N.J.

Continuation-in-part of Ser. No. 176,263, Aug. 30, 1971, , and a continuation-in-part of Ser. No. 273,860, July 21, 1972,. This application Apr. 26, 1973, Ser. No. 354,697

Int. Cl. C23b *5/28, 5/46*

U.S. Cl. 204—46 G **21 Claims**

A gold electroplating bath for use in barrel plating, rack plating operations or the like. The bath comprises an aqueous solution of a gold-alkali metal cyanide, conducting and buffering compounds, quantities of aminoguanidine, and one or more agents selected from the bath soluble salts and complexes of lead, thallium, and/or arsenic.

3,833,489

PROCESS FOR THE PREPARATION OF SQUARIC ACID BY REDUCTIVE CYCLOTETRAMERIZATION OF CARBON MONOXIDE

Raffaele Ercoli, 49, Via G. Campolo; Giuseppe Silvestri, 48, Via Emilia; Salvatore Gambino, 31, Via L. Ruggieri; Mauro Guainazzi, 70, Via Cavour, and Giuseppe Filardo, 16/A, Via Svezia, all of Palermo, Italy

Filed July 18, 1972, Ser. No. 272,741

Claims priority, application Italy, July 24, 1971, 42019/71; June 6, 1972, 25273/72

Int. Cl. C07b *29/06;* **C07c** *35/04, 49/45*

U.S. Cl. 204—59 QM **21 Claims**

A process for preparing dihydroxycyclobutenedione ("squaric acid") and squaric acid complexes and salts which comprises electrochemical cathodic reductive cyclotetramerization of carbon monoxide to produce the squarate anion, while preventing anodic reactions from substantially interfering with the cathodic reductive reaction.

3,833,490

PROCESS FOR THE PREPARATION OF 3,5-DIIODO-4-HYDROXYBENZONITRILE OR 3-IODO-4-HYDROXY-5-NITRO-BENZONITRILE

Jean Bizot, Essonne; Jean Courteix, Val-de-Marne, and Jean-Pierre Philipot, Hauts-de-Seine, all of France, assignors to Rhone-Poulene S.A., Paris, France

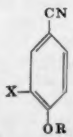
Filed Feb. 23, 1973, Ser. No. 335,178

Claims priority, application France, Feb. 25, 1972, 72.06492

Int. Cl. C07b *9/00*

U.S. Cl. 204—78 **18 Claims**

The compounds 3,5-diiodo-4-hydroxy-benzonitrile and 3-iodo-4-hydroxy-5-nitro-benzonitrile, which are known to possess herbicidal and chemotherapeutic properties respectively, are prepared by anodic iodination of a compound of the formula:



wherein X represents hydrogen, iodine or nitro, and R represents hydrogen, an alkali metal atom or alkanoyl of 1 through 4 carbon atoms, in an electrolysis cell in which the anolyte contains an alkali metal iodide or iodine and a solution or suspension of a compound of said formula.

3,833,491

PRODUCTION OF MACROCYCLIC COMPOUNDS

Carl D. Kennedy, 2302 Amity St., San Diego, Calif. 92109

Filed Mar. 2, 1973, Ser. No. 337,413

Int. Cl. B01j *1/12*

U.S. Cl. 204—158 S **10 Claims**

Cyclic ketone di- and triperoxides are converted at temperatures of from about 20°C. to 300°C. by the use of ultrasonic energy to macrocyclic hydrocarbons and macrocyclic lactones.

3,833,492

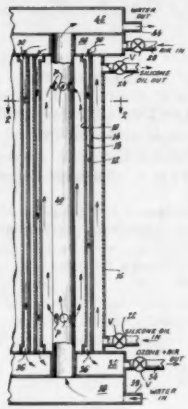
METHOD OF PRODUCING OZONE

L. Joseph Bollyky, Stamford, Conn., assignor to Pollution Control Industries, Inc., Stamford, Conn.

Division of Ser. No. 182,681, Sept. 22, 1971, Pat. No. 3,766,051. This application Mar. 22, 1973, Ser. No. 343,731

Int. Cl. C01b *13/10, 13/12*

U.S. Cl. 204—176 **3 Claims**



An ozone generator module of the electric discharge field type is provided having at least one cell comprising an assembly of three concentric tubular members, the inner and outer tubular members being electrodes separated by a tubular dielectric member spaced from one of the electrodes a distance sufficient to define a high density electric discharge zone between them, the cell or cells being disposed within a liquid container. Surprisingly good results are obtained by employing a combination of three method steps; — limiting variation in the cross sectional dimension of the field to within a very small range of tolerance; controlling the temperature of the electrodes; and limiting the density of the field by regulating the voltage across the field and the frequency employed.

3,833,493

IMAGING PROCESS

Edwin Zucker, Rochester, N.Y., assignor to Xerox Corporation, Stamford, N.Y.

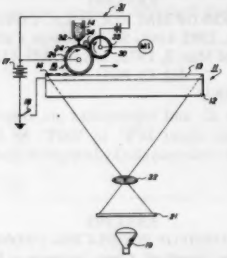
Division of Ser. No. 764,721, Oct. 3, 1968, Pat. No. 3,595,772. This application Jan. 20, 1971, Ser. No. 108,213

Int. Cl. B01k *5/00*

U.S. Cl. 204—180 R **4 Claims**

This invention relates to a method and apparatus for creating high shear stresses in a particulate suspension prior to use of such suspension for imaging or inking. The method and apparatus in one environment function to stress a thin layer of an

electrophoretic suspension of particles in a liquid carrier. The prestressed suspension is better suited than unstressed suspensions for preparing both monchromatic and polychromatic co-



pies from originals by particle migration through the suspension when it is exposed to electromagnetic radiation in image configuration while in an electric field across the suspension between two electrodes. The method and apparatus is also used for printing inks in order to form a prestressed, uniform, thin layer of the ink for application to the press.

3,833,494

METHOD OF MANUFACTURING A LANTHANUM HEXABORIDE-ACTIVATED CATHODE FOR AN ELECTRIC DISCHARGE TUBE

Antonius Johannes Alberta Van Stratum, Emmasingel, Eindhoven, and Niranjan Kumar Mitra, Best, both of Netherlands, assignors to U. S. Philips Corporation, New York, N.Y.

Filed May 2, 1973, Ser. No. 356,620

Claims priority, application Netherlands, May 30, 1972, 7207275

Int. Cl. C23b *13/00*

U.S. Cl. 204—181 **1 Claim**

A layer of lanthanum hexaboride is applied cataphoretically to a rhenium wire and then sintered. The process is repeated. In this manner a cathode with small evaporation and long life is obtained.

3,833,495

REFERENCE ELECTRODE HALF CELL

Willard T. Grubb, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 75,866, Sept. 28, 1970, Pat. No. 3,705,089. This application July 21, 1972, Ser. No. 273,847

Int. Cl. G01n *27/28*; **B01k** *3/00*

U.S. Cl. 204—195 F **2 Claims**

A reference electrode half cell has an elongated, flexible electrically insulated tube having opposite open ends, a silver wire positioned partially within the tube at one end thereof and extending outwardly from the one end, the tube bonded to the silver wire at the one end, a coating of silver chloride on a portion of the silver wire positioned within the tube, and at least one gelled equitransferent salt solution filling the tube in contact with the silver chloride coating on the silver wire and in contact with the opposite open end of the tube.

3,833,496

OIL COMPOSITION

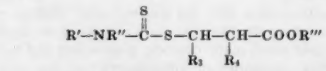
Robert E. Malec, Birmingham, Mich., assignor to Ethyl Corporation, Richmond, Va.

Filed Apr. 6, 1973, Ser. No. 348,625

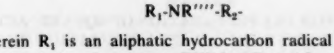
Int. Cl. C10m *1/38*, *1/32*

U.S. Cl. 252—33.6 **6 Claims**

Compounds having the formula:



wherein R′ is selected from the group consisting of aliphatic hydrocarbon radicals containing about 8–100 carbon atoms, and hydrocarbylaminohydrocarbyl radicals having the formula:



wherein R_1 is an aliphatic hydrocarbon radical containing about 8–100 carbon atoms, R′′′′ is selected from the group consisting of hydrogen and C_{1-4} alkyls and R_2 is a divalent aliphatic hydrocarbon radical containing about 2–10 carbon atoms, R_3 and R_4 are selected from the group consisting of hydrogen and alkyl radicals containing about 1–4 carbon atoms, R′′ is selected from the group consisting of hydrogen and C_{1-4} alkyls and R′′′ is selected from the group consisting of hydrogen, C_{1-10} alkyl and salt cations, are effective antiwear and antirust additives in lubricating oils and greases.

3,833,497

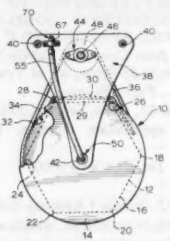
CABLE CONNECTOR CONTACT

Ralph E. Belke, Oak Park, Ill., assignor to Belke Manufacturing Company, Chicago, Ill.

Filed Jan. 2, 1973, Ser. No. 320,322

Int. Cl. B01k *3/00*

U.S. Cl. 204—279 **6 Claims**

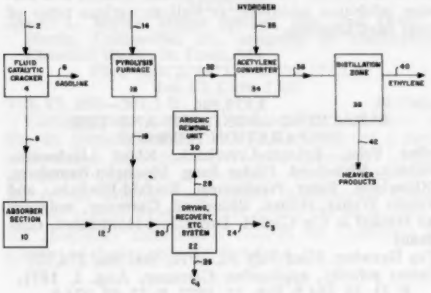


A non-destructible electrical connecting cable system or dangle for a rotary electroplating barrel, wherein one end of such cable is inserted into the barrel at its axis of rotation to provide a cathode within the electroplating barrel and the opposite end of the cable is provided with a spherical contact universally swivable in a supporting collar clamp, so that if the cable becomes snagged with parts tumbling in the rotating barrel, the normally stationary cable will twist in the manner of a flexible cable and free itself and will not break off and will continuously transmit electrical energy even while being twisted, so that the plating operation continues for its programmed cycle without damaging the parts being plated.

3,833,498
PROCESS FOR REDUCING THE ARSENIC CONTENT OF GASEOUS HYDROCARBON STREAMS BY THE USE OF SELECTIVE ACTIVATED CARBON

Donald L. Stahfeld, Glenshaw, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Filed July 18, 1973, Ser. No. 380,208
Int. Cl. C10g *17/00, 17/02*
U.S. Cl. 208—307 **10 Claims**

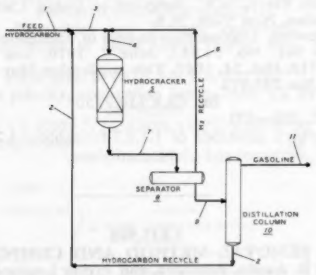


A process for reducing the arsenic content of a gaseous hydrocarbon stream by contacting the stream with a sorbent comprising a specially defined metals content activated carbon prepared from a bituminous coal.

3,833,499
HYDROCONVERSION PROCESS

Clark J. Egan, Piedmont, and Robert J. White, Pinole, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 129,986, March 31, 1971, Pat. No. 3,769,235. This application Apr. 30, 1973, Ser. No. 355,396
Int. Cl. C10g *13/04;* **B01j** *11/40*
U.S. Cl. 208—111 **13 Claims**



A hydrocracking process using a palladium-zeolite-amorphous inorganic oxide catalyst containing 1 to 40 weight percent zeolite and wherein the catalyst is prepared by impregnating palladium into the zeolite, combining the impregnated zeolite with the amorphous inorganic oxide, and impregnating at least the amorphous inorganic oxide with palladium. Preferably the catalyst is calcined at 1,000° to 1,800° F. The catalyst is found to be especially effective in hydrocracking high end point feeds with surprisingly low buildup of heavy ends in the recycle stream.

3,833,500
EXTENDED SERVICE INTERVAL GREASE COMPOSITIONS

Crawford F. Carter, Pleasant Hill, and John L. Dreher, El Cerrito, Calif., assignors to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed Feb. 14, 1972, Ser. No. 226,309
Int. Cl. C10m *5/20, 5/24*
U.S. Cl. 252—18 **10 Claims**

A grease composition is provided comprising a major portion of a mineral oil of lubricating viscosity and effective amounts of (1) an alkali metal or alkaline earth metal soap of a fatty acid, (2) a N,N-di(hydroxy-lower alkyl) saturated aliphatic carboxamide and (3) at least one alkali metal salt of a medium-to-long-chain aliphatic ortho- or pyrorophosphate ester. Preferably, the alkali metal or alkaline earth metal soap is a soap complex of a mixture of a fatty acid and a low molecular weight aliphatic acid. The greases described have superior rust inhibition properties. The greases also retain their penetration properties when contacted with water and have superior adhesiveness qualities.

3,833,501
LUBRICATING COMPOSITIONS

John Scotchford Elliott, Ian Robert Henry Crail, and Herbert Frank Askew, London, England, assignors to Burmah Oil Trading Limited, London, England

No Drawing. Continuation-in-part of application Ser. No. 213,165, Dec. 28, 1971, now Patent No. 3,788,990. This application June 27, 1972, Ser. No. 266,697
Claims priority, application Great Britain, Dec. 29, 1970, 61,619/70
The portion of the term of the patent subsequent to Jan. 29, 1991, has been disclaimed
Int. Cl. C10m *1/28, 1/40*
U.S. Cl. 252—33.4 **11 Claims**

A lubricating composition comprises a major proportion of a mineral oil of lubricating viscosity and a minor proportion of a combination of additives (a) and (b), additive (a) being a nitrogen-free random copolymer of an alkyl acrylate component and an alkyl methacrylate component wherein the copolymer is composed of up to 65% alkyl acrylate units based on the total number of alkyl methacrylate and alkyl acrylate units present in the copolymer, the alkyl acrylate component is methyl acrylate, ethyl acrylate or a mixture thereof and the alkyl methacrylate component comprises at least 50% alkyl methacrylate units in which the alkyl group contains from 1 to 10 carbon atoms, and additive (b) being an alkaline earth metal containing detergent having a total base number greater than 20.

ERRATUM

For Class 252—33 see:
Patent No. 3,833,496

3,833,502
METHOD FOR IMPROVING THE ADHERENCE OF METALWORKING COOLANTS TO METAL SURFACES

Edward F. Leary, Western Springs, and Hobart M. Krillic, South Holland, Ill., assignors to Nalco Chemical Company, Chicago, Ill.

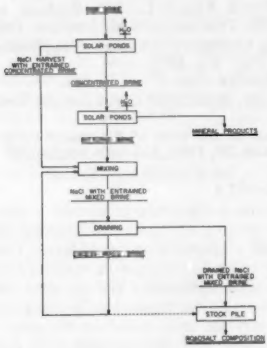
No Drawing. Filed Apr. 30, 1973, Ser. No. 355,375
Int. Cl. C10m *1/06*
U.S. Cl. 252—49.5 **3 Claims**

Water-based, metalworking coolants may be made to adhere to metal surfaces by incorporating with such coolants small amounts of water-soluble polymers.

3,833,503
STABLE PYROELECTRIC ELEMENTS
Naohiro Murayama and Hideyuki Hashizume, Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 9, 1972, Ser. No. 224,910
Claims priority, application Japan, Feb. 9, 1971, 46/5,008
Int. Cl. H01b *3/18*
U.S. Cl. 252—63.7 7 Claims

The stable pyroelectric element composed of a vinylidene fluoride resin electret of which the macroscopic polarization due to space charges have been depolarized.

3,833,504
MOIST ROAD SALT COMPOSITION AND PROCESS FOR MAKING THE SAME
Ulrich E. G. Neitzel, Heringen (Werra), Germany, and Frederick J. Andreasen, Brigham City, Utah, assignors to Great Salt Lake Minerals & Chemicals Corporation, Ogden, Utah
Original application June 28, 1971, Ser. No. 157,147, now Patent No. 3,772,202. Divided and this application Mar. 5, 1973, Ser. No. 338,203
Int. Cl. C09k *3/18*
U.S. Cl. 252—70 7 Claims



A moist road salt composition comprises sodium chloride moistened with entrained brine containing between about 40 and about 75, ideally 45 to 60, moles magnesium chloride per 1000 moles water. The sodium chloride may be obtained by evaporating natural brines such as those from the Great Salt Lake of Utah. The crystal crop, together with entrained brine, may then be mixed with a similar brine having a much higher concentration of magnesium chloride to produce the desired final composition of the brine entrained by the crystal crop.

3,833,505
SILICONE FLUIDS USEFUL AS HYDRAULIC FLUIDS
Edgar D. Brown, Jr., Schenectady, N.Y., assignor to General Electric Company
No Drawing. Filed May 24, 1972, Ser. No. 256,482
The portion of the term of the patent subsequent to June 28, 1991, has been disclaimed
Int. Cl. C09l *3/00*
U.S. Cl. 252—78 18 Claims

A silicone fluid mixture useful as a hydraulic fluid and, more particularly, useful as a brake fluid comprising (a) 1 to 80% by weight of the total fluid mixture of a hydrocarbonoxy-containing polymer fluid and 20 to 99% by weight of the total fluid of a linear polymer silicone fluid of the formula,

$$R_n{}^{10}SiO_{\frac{4-n}{2}}$$

where n varies from 2.0 to 3.0, R^{10} is selected from monovalent hydrocarbon radicals, halogenated monovalent hydrocarbon radicals and lower cyanoalkyl radicals and the viscosity of the linear fluid varies from 20 to 500 centistokes at 25° C. There may be added to the above silicone fluid mixture various types of anti-oxidant and corrosion inhibition additives, as well as various types of rubber swell additives.

3,833,506
BLEACHING ASSISTANTS AND THE PREPARATION THEREOF
Walter Fries, Erkrath-Unterbach, Klaus Hachmann, Hilden, Rhineland, Dieter Jung, Monheim-Baumberg, Rhineland, Peter Neuhausen, Krefeld-Fischeln, and Dieter Walter, Hilden, Rhineland, Germany, assignors to Henkel & Cie GmbH, Dusseldorf-Holthausen, Germany
No Drawing. Filed July 31, 1972, Ser. No. 276,727
Claims priority, application Germany, Aug. 2, 1971, P 21 38 584.2; Feb. 21, 1972, P 22 07 974.9
Int. Cl. C11d *7/18, 7/38*
U.S. Cl. 252—99 17 Claims

A bleaching assistant suitable for use in pulverulent washing and bleaching compositions comprising particulate matter consisting essentially of (A) 10% to 70% by weight of an activator for active oxygen and (B) from 30% to 90% by weight of a mixture of (1) fatty acids and (2) polyethylene glycol.

The process of forming this bleaching assistant comprises spraying a homogeneous liquid mixture of the activator, fatty acid and polyethylene glycol into a solidification zone to form particles thereof of which at least 70% have an average diameter of 0.1 to 1 mm.

3,833,507
AZEOTROPIC COMPOSITION
J. Allan Schofield, Riverside, Conn., and Roger A. Delano, Dobbs Ferry, N.Y., assignors to Union Carbide Corporation, New York, N.Y.
No Drawing. Continuation-in-part of abandoned applications Ser. No. 54,083, June 2, 1970, and Ser. No. 677,715, Oct. 24, 1967. This application May 23, 1972, Ser. No. 255,972
Int. Cl. C11d *7/50*
U.S. Cl. 252—171 5 Claims

A ternary azeotrope of 1,1,2,2-tetrachloro-1,2-difluoroethane, methanol and trichloroethylene.

3,833,508
GAS REMOVAL METHOD AND COMPOSITION
Robert R. Austin, Pasadena, and Arthur Leonard Vincent, Monrovia, Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 137,994, Apr. 27, 1971, now Patent No. 3,757,488. This application Oct. 12, 1971, Ser. No. 188,540
Int. Cl. C01b *31/16;* C01k *3/00*
U.S. Cl. 252—189 5 Claims

A selective method of removing sulfur dioxide from flue gases or the like containing both sulfur dioxide and hydrogen sulfide without removing the hydrogen sulfide by bubbling the flue gas through about a 5–95 percent solution of an organic acid and an alkali metal salt of the said acid. The acid is selected from the group of:

citric, malic, lactic, succinic, ascorbic and tartaric. The acid is preferably citric and the alkali metal is preferably potassium. The ratio of the weight of the salt to that of the acid may be within the range of about 1*s*:2*a* to 6*s*:1*a* or such as is needed to make the solution pH between about 4.0 and 6.0, where *s* and *a* are one mole each of said salt and said acid, respectively. The said ratio preferably is 5*s*:1*a* or the pH is preferably 5.7.

3,833,509

RADIONUCLIDE GENERATOR PRODUCTION METHOD

James L. Brown, House Springs, Mo., and Orval A. Harris, Collinsville, Ill., assignors to Mallinckrodt Chemical Works, St. Louis, Mo.

Filed Sept. 2, 1971, Ser. No. 177,269
Int. Cl. C09k *3/00*
U.S. Cl. 252—301.1 R **16 Claims**

Commercially important radionuclide generators utilize an alumina sorbent on which is adsorbed a parent radionuclide. The eluate from such generators contains significant quantities of aluminum ions in addition to the desired daughter radionuclide. Washing the alumina with an acetate fixing solution during the production of the generators substantially reduces the aluminum ion content of eluates obtained therefrom.

3,833,510

OPTICALLY BRIGHTENED COMPOSITIONS WITH UNSYMMETRICAL CARBOXYSTYRYLPHENYL-CONTAINING COMPOUNDS

Nathan N. Crounse and Kantilal B. Desai, Cincinnati, Ohio, assignors to Sterling Drug Inc., New York, N.Y.

No Drawing. Filed Feb. 7, 1972, Ser. No. 224,296
Int. Cl. D06l *3/12*
U.S. Cl. 252—301.2 W **4 Claims**

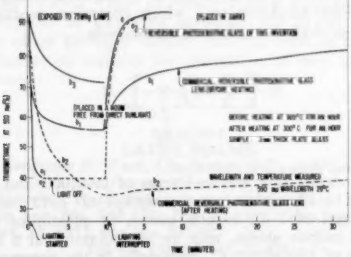
Benzofurans, benzothiophenes, and naphthofurans which are substituted by carboxystyrylphenyl groups are optical brightening agents useful for whitening and brightening natural and synthetic fibers, papers, resins and the like. The compounds are conveniently prepared by interacting benzofurans, benzothiophenes or naphthofurans, which are substituted by a *p*-tolyl group, with an aromatic aldehyde or preferably the anil derivative thereof.

3,833,511

PHOTOCHROMIC GLASS AND PROCESS FOR PRODUCING THE SAME

Toshiharu Yamashita and Tetsuro Izumitani, Tokyo, Japan, assignors to Hoya Glass Works, Ltd., Tokyo, Japan

Filed Mar. 8, 1972, Ser. No. 232,667
Claims priority, application Japan, Nov. 13, 1971, 46/90,909
Int. Cl. G02c *7/10;* **G02b** *9/012;* **F21v** *9/00*
U.S. Cl. 252—300 **10 Claims**


EXPOSED TO 75mW LAMP
PLACED IN DARK
REVERSIBLE PHOTOCHROMIC GLASS OF THIS INVENTION
COMMERCIAL REVERSIBLE PHOTOCHROMIC GLASS (LONG EXPOSURE HEATING)
PLACED IN ROOM FREE FROM DIRECT SUNLIGHT
BEFORE HEATING AT 300°C FOR AN HOUR
AFTER HEATING AT 300°C FOR AN HOUR
SAMPLE: 2mm THICK PLATE GLASS
WAVELENGTH AND TEMPERATURE MEASURED
500 mμ WAVELENGTH 20°C
LIGHT OFF
COMMERCIAL REVERSIBLE PHOTOCHROMIC GLASS LENS (AFTER HEATING)
LIGHTING STARTED
LIGHTING INTERRUPTED
TIME (MINUTES)

A photochromic glass comprising a base glass consisting of certain proportions of $SiO_2Al_2O_3$, B_2O_3, K_2O_3 and BaO, in which the ratio of BaO/K_2O is 0.05–0.40, and photosensitive ingredients consisting of 0.15–0.7 parts of Ag and one or more of Cl, Br and I in an amount corresponding to more than the chemical equivalent of Ag for every 100 parts of the base glass.

A process for producing the glass by preliminarily heating the glass at a temperature of 300–450° C. for not less than 30 minutes and then further heat-treating the glass at a temperature between the strain temperature and the softening temperature of the glass, thereby improving the photochromic properties.

3,833,512

SOLUTION COMPOSITIONS OF ORGANO-SILICONE POLYMERS

Bela Prokai, Mahopac, and Bernard Kanner, West Nyack, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Original application Apr. 8, 1971, Ser. No. 132,534. Divided and this application June 26, 1972, Ser. No. 266,215
Int. Cl. B01f *17/30, 17/42, 17/54*
U.S. Cl. 252—356 **9 Claims**

Solution compositions are provided consisting essentially of four different ingredients: (1) a liquid organosilicone polymer containing monomeric units (A), (B) and (C) where A is $SiO_{4/2}$, B is a polyfunctional siloxy unit in which silicon is bonded to at least one organic moiety bearing a poly(oxyalkylene) chain, and C is a monofunctional triorganosiloxy unit, the mole ratio of (A) to (B) to (C) being 0.4–2:1:0.2–2, respectively; (2) an organic acidic component consisting essentially of one or more aliphatic and cycloaliphatic carboxylic acids having 15–20 carbon atoms; (3) a non ionic organic surfactant; and (4) a water soluble glycol. The solution compositions are useful as surfactant-providing compositions finding particular application in the manufacture of flexible polyester urethane cellular products, including flame-retarded foams.

3,833,513

CORROSION INHIBITING GEL FOR ELECTRICAL CONNECTORS

Joseph Fath, Princeton, N.J., assignor to Tenneco Chemicals Inc.

No Drawing. Filed Feb. 7, 1972, Ser. No. 224,308
Int. Cl. C23f *11/10*
U.S. Cl. 252—389 R **7 Claims**

This invention provides a metal corrosion protection medium especially designed and adapted for electrical connectors, the medium comprises: (1) a base oil formed of a liquid polymeric ester of an alkylene glycol and an aliphatic dicarboxylic acid, the polymeric ester having a molecular weight in the range of from about 400 to about 1500, the ester being capped by a monohydric alcohol or a monocarboxylic acid, (2) a gelling, or thickening, agent and (3) a stabilizer combination including (a) an aromatic amine antioxidant, (b) a hindered phenol antioxidant, (c) a metal corrosion inhibitor and (d) a rust inhibitor.

3,833,514

PROCESS FOR THE PRODUCTION OF ACTIVATED CARBON

Arnold N. Wennerberg, Chicago, Ill., and Robert M. Alm, Crown Point, Ind., assignors to Standard Oil Company, Chicago, Ill.

Continuation of abandoned application Ser. No. 706,146, Feb. 16, 1968. This application Mar. 24, 1971, Ser. No. 127,854
Int. Cl. C01b *31/08*
U.S. Cl. 252—422 **8 Claims**

Process for the production of active carbon by treating an aromatic acid with a suitable electrolyte to form the

salt of the acid and thermally decomposing the salt to produce an active carbon; and the product produced by such process.

3,833,515
CATALYST FOR THE PREPARATION OF POLYOLEFINS

Rudolf Amtmann, Kriftel, and Bernd Diedrich, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

No Drawing. Filed Sept. 1, 1971, Ser. No. 177,101
Claims priority, application Germany, Sept. 2, 1970, P 20 43 508.9
Int. Cl. B01j *11/84*
U.S. Cl. 252—429 B 6 Claims

A polymerization catalyst is prepared by mixing (a) the reaction product between a magnesium compound containing hydroxyl groups, a titanium alcoholate and a silicium tetrahalide with (b) an organo aluminum compound. By means of this catalyst, olefins can be polymerized under a very low pressure and the polymer obtained does not require the removal of the catalyst.

3,833,516
PLATINUM-INDIUM-MOLYBDENUM REFORMING CATALYSTS

Wilard H. Sawyer, Baton Rouge, La., assignor to Esso Research and Engineering Company

Filed Jan. 3, 1972, Ser. No. 215,170
Int. Cl. B01j *11/78*
U.S. Cl. 252—441 5 Claims

Process and composition for improving the octane quality of naphthas. A catalyst comprising a triumvirate of the metals platinum, molybdenum and indium, composited with a porous inorganic oxide base, is found particularly useful in reforming, especially in reforming highly paraffinic naphthas.

3,833,517
AGENT FOR THE TREATMENT OF CELLULOSIC FIBER MATERIALS AND PROCESS

Alfred Kling, Ladenburg, and Viktor Specht, Dossenheim, Germany, assignors to Benckiser-Knapsack GmbH, Ladenburg (Neckar), Germany

No Drawing. Filed Mar. 12, 1971, Ser. No. 123,903
Int. Cl. C11d *3/26, 3/36*
U.S. Cl. 252—545 8 Claims

Alkaline baths for treating fiber material composed of or containing native cellulose such as cotton do not cause appreciable degradation of the cellulose chain when having added thereto amino alkylene phosphonic acids and/or 1-hydroxy alkane-1,1-diphosphonic acids or their salts.

3,833,518
DENTURE ADHESIVE PREPARATION

Howard Rubin, Rockaway, and James J. Keegan, Bloomfield, N.J., and Ram N. Gidwani, Edmonton, Alberta, Canada, assignors to Warner-Lambert Company, Morris Plains, N.J.

No Drawing. Filed Apr. 13, 1972, Ser. No. 243,816
Int. Cl. C08b *21/08*; C08f *37/16*
U.S. Cl. 260—17 R 11 Claims

An improved anhydrous denture adhesive is prepared to contain a mixture of a cationic polymeric material and a natural or synthetic anionic gum material as the adhesive ingredient. The mixture may be formulated as a powder or anhydrous paste, which, when applied to dentures and exposed to moisture, develops superior adhesive properties. Suitable cationic materials include at least one of the following: copolymer of substituted or unsubstituted acrylamide with vinyl quaternary ammonium salts; copolymers of substituted, or unsubstituted acrylamide with vinyl and alkyl substituted vinyl pyridinium salts; and an O-lower alkyl-trimethylammonium chloride-substituted-anhydroglucose polymer. As the anionic component there may be used at least one natural gum, such as gum karaya, gum arabic, gum Shiraz, gum tragacanth, pectin, pectinates, algin, and alginates; or at least one synthetic gum including copolymers of maleic anhydride with vinyl-lower alkyl-ethers, carboxymethyl celluloses, and cellulose sulfates.

3,833,519
STABILIZERS FOR VINYL CHLORIDE-CONTAINING RESINS

Adam J. Ejk, Piscataway, and Robert C. Ringwood, Jr., Sewaren, N.J., assignors to M & T Chemicals Inc., Greenwich, Conn.

No Drawing. Filed July 10, 1972, Ser. No. 270,069
Int. Cl. C08f *45/62*
U.S. Cl. 260—23 XA 9 Claims

Improved stabilizer compositions which require less tin to impart a given degree of heat stabilization to vinyl chloride-containing polymers are obtained using reaction products of diorganotin compounds with esters of aliphatic polyhydroxylated organic compounds in combination with certain barium derivatives. Up to 50% of the organotin reaction product present in a polymer composition can be replaced by barium compounds without a significant decrease in heat stabilization.

3,833,520
METHOD OF CONTROLLING MICROBIAL GROWTH IN POLYVINYL HALIDE RESIN COMPOSITIONS

George Tirpak, East Brunswick, and Robert J. Stanaback, Gladstone, N.J., assignors to Tenneco Chemicals, Inc.

No Drawing. Filed Jan. 5, 1973, Ser. No. 321,187
Int. Cl. C08f *19/14, 21/04*
U.S. Cl. 260—23 XA 10 Claims

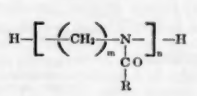
Resistance to attack by fungi and bacteria that is retained even after prolonged weathering is imparted to polyvinyl halide resin compositions by incorporating in them a biocidally-effective amount of a solution that contains from 1 to 3% of N-trichloromethylthiophthalimide in a po'yalkylene glycol dibenzoate solvent.

3,833,521
PROCESS FOR THE PARTIAL DEACYLATION OF POLY(N-ACYL-ALKYLENIMINES)

Bernhard Karbstein and Gerd Scheppers, Marl, Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Germany

No Drawing. Filed Oct. 5, 1972, Ser. No. 295,168
Claims priority, application Germany, Oct. 15, 1971, P 21 51 379.1
Int. Cl. C08g *33/08*
U.S. Cl. 260—2 EN 15 Claims

A process for the production of partially deacylated poly(N-acyl-alkylenimines) which comprises reacting a poly(N-acyl-alkylenimine) of the formula



wherein m is 2 or 3, n is an integer of 10–5,000, and R is alkyl of 1–12 carbon atoms, aralkyl of 7–12 carbon atoms, aryl of 8–12 carbon atoms, or substituted aryl of 6–12 carbon atoms, with an alkanolamine at a temperature of 150°–250° C., optionally in the presence of an inert solvent. Deacylation in the absence of concentrated mineral acids or inorganic salts facilitates recovery of the deacylated product.

3,833,522

TRIHALOMETHYL HYDROCARBON GLYCIDYL ETHERS AND POLYMER COMPOSITIONS THEREOF

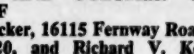
Harold A. Tucker, 16115 Fernway Road, Shaker Heights, Ohio 44120, and Richard V. Kemp, 980 Nevin, Akron, Ohio 44310

No Drawing. Original application July 19, 1971, Ser. No. 163,991, now abandoned. Divided and this application Apr. 12, 1973, Ser. No. 350,326

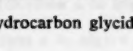
Int. Cl. C08f *23/00;* **C08g** *23/20*

U.S. Cl. 260—2 A **6 Claims**

Trihalomethyl hydrocarbon glycidyl ethers of the formula



wherein X is —Cl, —Br, or —I and R is an alkyl, cycloalkyl, aryl, alkaryl, or aralkyl radical of 1 to 12 carbon atoms, readily homopolymerize or copolymerize with other epoxide.



containing monomers to yield useful high molecular weight polyether polymers. The polyether compositions have particular utility as substrates onto which vinylidene ($CH_2=C<$) monomers can be grafted using metal complexes as catalysts to provide improved polymers.

3,833,523

RIGID CELLULAR MATERIALS HAVING A GOOD MECHANICAL STRENGTH AT LOW TEMPERATURES

Henri Tariel, Rillieux, and Roger Guyon, Oullins, France, assignors to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude and la Societe Anonyme dite: Pneumatiques, Caoutchouc Manufacture et Plastiques Kleber-Colombes

Continuation of abandoned application Ser. No. 105,044, Jan. 8, 1971. This application Sept. 7, 1972, Ser. No. 286,912

Claims priority, application France, Feb. 13, 1970, 7005191

Int. Cl. C08g *22/44*

U.S. Cl. 260—2.5 R **7 Claims**

Rigid cellular materials with closed cells, prepared from polyvinyl chloride and manufactured by copolymerising at least one vinylidene monomer with an ethylenic carboxylic acid anhydride, by grafting this copolymer on the chains of a polyvinyl chloride, by crosslinking with one another the grafted copolymers, by formation of two amide functions between the isocyanate groups of a mixture of polyisocyanates and the acid anhydride groups and by decomposing a blowing agent by heat during all these operations; the mixture of polyisocyanates contains at least 50% by weight of hexamethylene diisocyanate.

They can be used with advantage for all the applications where the rigid cellular material must be excellent as regards its capacity for elongation at very low temperatures.

3,833,524

LATEX FOAMS

Benjamin F. Ward, Charleston, S.C., assignor to Westvaco Corporation, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 160,171, July 6, 1971. This application Nov. 20, 1972, Ser. No. 307,927

Int. Cl. C08d *9/00, 13/08*

U.S. Cl. 260—2.5 L **9 Claims**

Polycarboxylic acids and fatty acid-polycarboxylic acid mixtures are effective ingredients for foam latex. When a polycarboxylic acid having from 15 to 26 carbon atoms, at least one carboxyl group near the center of the hydrocarbon chain and at least one on the termial carbon, is used as an ingredient in foam latex, there is imparted to the latex faster bubble rates, good foam stability, independence from pH control, and variable foam density. It is preferable that the post stabilizers contain from 1 to 98% by weight polycarboxylic acid with the remainder being oleic acid or a fatty acid mixture having a substantial oleic acid fraction.

3,833,525

PHENOLIC BLOCKED ISOCYANATE COMPOSITIONS CONTAINING A HETEROCYCLIC NITROGEN CATALYST

Charles M. Orlando, Schenectady, and Carl M. Emerick, Mechanicville, N.Y., and Robert A. Jerussi, Fairfax, Va., assignors to General Electric Company

No Drawing. Original application Apr. 23, 1971, Ser. No. 137,022, now Patent No. 3,764,375. Divided and this application June 20, 1973, Ser. No. 371,827

Int. Cl. C08g *22/32, 22/36, 22/44*

U.S. Cl. 260—2.5 AC **10 Claims**

One package pourable polyurethane compositions convertible to the non-pourable state at temperatures above 70° C. are provided, utilizing a polyfunctional arylurethane, a hydroxy containing organic polymer and a nitrogen containing heterocyclic catalyst, such as imidazole. The polyurethane compositions are useful as wire enamels, coating compositions, etc., and can be converted to foams. A wire coating method is also provided.

3,833,526

SEMI-RIGID POLYURETHANE FOAMS FROM A MIXTURE OF OXYPROPYLATED POLYOLS

Stanley Cear and Joseph Feltzin, Wilmington, Del., assignors to ICI America Inc., Wilmington, Del.

No Drawing. Continuation-in-part of abandoned application Ser. No. 147,710, May 27, 1971. This application June 4, 1973, Ser. No. 366,331

Int. Cl. C08g *22/44*

U.S. Cl. 260—2.5 AP **13 Claims**

Semi-rigid polyurethane foam compositions are provided which have excellent energy absorption and low rebound properties while retaining other desirable physical properties characteristic of semi-rigid polyurethane foams. The polyurethane foams may be prepared by reacting an an organic polyisocyanate with a polyoxypropylene ether of 2,2-bis(4-hydroxyphenyl) propane and a polyoxypropylene ether of sorbitol. Also provided are polyol compositions suitable for the preparation of cellular polyurethanes which comprise a polyoxypropylene ether of 2,2-bis(4-hydroxyphenyl) propane wherein the ether contains from 4 to 9 mols of oxypropylene per mol of ether and a polyoxypropylene ether of sorbitol containing from 30 to 55 mols of oxypropylene per mol of ether.

3,833,527

HEMICELLULOSE REACTION PRODUCTS

Erkki J. Pulkkinen, Morris Plains, N.J., and Marten Reintjes and Laurence Dean Starr, Shelton, Wash., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

No Drawing. Filed Dec. 18, 1972, Ser. No. 316,066

Int. Cl. C08b *25/00, 29/00*

U.S. Cl. 260—9 **17 Claims**

Water soluble products are prepared from hemicelluloses by reacting them in an alkaline medium with epichlorohydrin and an alkanolamine or with an adduct of epichlorohydrin and a tertiary amine or its salt. The hemicelluloses which are used have an average degree of polymerization no greater than 400. The products while still in an alkaline state or neutralized if desired are useful as adhesives forming strong, water soluble, nonhygroscopic adhesives upon drying. The water soluble

products upon protonation with a mineral acid form effective flocculants for aqueous suspensions and can be dried to colorless, non-hygroscopic powders. The hemicelluloses are extracted from vegetable matter such as wood or separated from pulp bleaching and refining effluents by known methods and, depending upon their composition, can be advantageously pretreated to increase their solubility and reactivity in aqueous and alkaline solutions.

3,833,528

BITUMINOUS COMPOSITION

Rolf-Dieter Behling and Manfred Wolfgang Oelsner, Hamburg, and Erich Gunther Zenke, Halstenbek, Germany, assignors to The British Petroleum Company Limited, London, England

No Drawing. Filed Mar. 1, 1972, Ser. No. 231,023

Claims priority, application Germany, Mar. 17, 1971, P 21 12 773.1

Int. Cl. C08f *45/28, 45/52*
U.S. Cl. 260—28.5 AS **12 Claims**

Bitumen, flux oil and 5–25% by weight of EPT rubber are blown to form a concentrate which is then blended with unblown bitumen to form a paving grade material.

3,833,529

WATER-SOLUBLE ALKYD RESINS AND A PROCESS FOR THEIR PREPARATION

Kenneth H. Albers, Alden E. Blood, and Thomas C. Snapp, Jr., Longview, Tex., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 151,952, June 10, 1971, now Patent No. 3,709,858, which is a continuation-in-part of application Ser. No. 41,577, May 28, 1970, now Patent No. 3,652,501. This application Mar. 24, 1972, Ser. No. 237,901

The portion of the term of the patent subsequent to Mar. 28, 1989, has been disclaimed

Int. Cl. C08g *20/30, 41/00*
U.S. Cl. 260—29.2 N **26 Claims**

A curable, water-soluble alkyd resin which is useful in an improved protective coating composition is a polyesteramide of at least one polycarboxylic acid and a polyol component; the polyol component comprising a substantial amount of N,N-bis[2-hydroxyalkyl]-2-hydroxyethoxyacetamide, at least one additional polyhydric aliphatic or cycloaliphatic alcohol, and a diol-acid, e.g., 2,2-bis(hydroxymethyl)propionic acid.

3,833,530

MORTAR COMPOSITION WITH VINYL CHLORIDE POLYMERIC ADHESION PROMOTING AGENT

Paul Wicht, Fribourg, and Kurt Volken, Basel, Switzerland, assignors to Linza Ltd., Basel, Switzerland

No Drawing. Original application Dec. 16, 1970, Ser. No. 98,912, now abandoned. Divided and this application May 4, 1972, Ser. No. 250,155

Claims priority, application Switzerland, Dec. 18, 1969, 18,799/69

Int. Cl. C04b *13/26;* **C08f** *45/24*
U.S. Cl. 260—29.6 S **3 Claims**

A mortar composition containing a hydraulic binder and 5–50% by weight of an adhesion promoting agent for the mortar upon hardening comprising an aqueous dispersion prepared by polymerizing a monomer mixture of 30 to 80% by weight of vinyl chloride and 20 to 70% by weight of polymerisable, internally plasticising monomers in the presence of an aqueous phase which contains, referred to the total weight of the monomers.

(a) 3 to 6% by weight of an emulsifier mixture which consists of 60 to 90% by weight of non-ionic emulsifiers and 10 to 40% by weight of anionic emulsifiers,
(b) a polymerisation catalyst,
(c) 2 to 4% by weight of a water-soluble solvent for the polymer,
(d) 0.3 to 0.5% by weight of a copolymerisable, water-soluble monomer, and
(e) a buffer agent,

and further adding 0.5 to 5% by weight, referred to the total dispersion, of an anionic emulsifier, and 0.1 to 0.5% by weight, referred to the total dispersion, of an antifoam agent to the dispersion thereby obtained.

3,833,531

REACTION PRODUCTS OF EPIHALOHYDRIN AND POLYMERS OF DIALLYLAMINE AND SALTS THEREOF AND THEIR USE IN PAPER

Gerald I. Keim, West Grove, Pa., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Application Apr. 22, 1970, Ser. No. 30,986, now Patent No. 3,700,623, which is a continuation-in-part of abandoned application Ser. No. 5,956, Jan. 26, 1970. Divided and this application Aug. 30, 1972, Ser. No. 284,842

Int. Cl. C08f *3/86, 13/06, 45/44*
U.S. Cl. 260—29.6 CM **14 Claims**

Water-soluble, alkaline curing resins which are the reaction products of an epihalohydrin and a polymer of a diallylamine are disclosed. The resins are particularly useful as wet strength agents for paper and additionally give superior dry strength to paper.

3,833,532

LATEX PREPARATION

Donald Alfred Bennett, Brockenhurst, and Edward William Duck, Southampton, England, assignors to The International Synthetic Rubber Company Limited, Hampshire, England

Filed May 5, 1972, Ser. No. 250,745

Claims priority, application Great Britain, May 13, 1971, 14,626/71

Int. Cl. C08d *3/02;* **C08f** *3/42, 3/62*
U.S. Cl. 260—29.7 SQ **28 Claims**

A process for the preparation of rubbery polybutadiene latex of large particle size especially suitable for use in grafting reactions, as in the preparation of ABS, comprises

(1) emulsifying butadiene with 0.5 to 1.5 parts by weight per hundred parts of butadiene of an anionic emulsifier and in addition a thermally decomposable free radical initiator,
(2) initiating polymerization and allowing polymerization to proceed under conditions such that the temperature of the reaction mixture is in excess of 85° C. for at least part of the reaction, and
(3) recovering the latex.

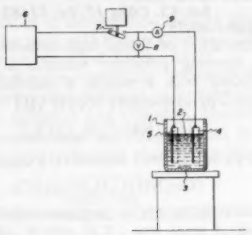
The process is advantageously used for a continuous flow polymerization in a stirred pressure vessel at a temperature not exceeding 100° C. using a mixed anionic emulsifier system and a persulphate initiator.

3,833,533

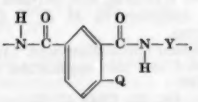
AQUEOUS ELECTROCOATING SOLUTION FROM POLYAMIDE-ACID RESIN

Fred F. Holub, Schenectady, and Richard F. Gaertner, Slingerlands, N.Y., assignors to General Electric Company

Original application May 27, 1970, Ser. No. 40,802, now abandoned. Divided and this application June 21, 1972, Ser. No. 264,949
Int. Cl. C08g *20/32, 51/24;* C23b *13/00*
U.S. Cl. 260—29.2 M 5 Claims



Aqueous solutions of polyamide acids having chemically-combined divalent benzene carboxylic acid amide units of the formula



where Q is an ammonium or organic amine neutralized carboxy radical and Y is a divalent organo radical, can be electrocoated onto an electroconducting substrate to provide for polyamideimide films having valuable insulating characteristics.

3,833,534

REINFORCED POLYAMIDE COMPOSITIONS AND PROCESS OF PREPARATION THEREOF

Paul A. Tierney, Ballwin, and Ross M. Hedrick and James D. Gabbert, St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation of application Ser. No. 888,047, Dec. 24, 1969, which is a continuation-in-part of applications Ser. No. 806,331, Ser. No. 806,332, and Ser. No. 806,333, all Dec. 30, 1968, all now abandoned, which are a continuation-in-part of application Ser. No. 560,247, June 24, 1966, now Patent No. 3,419,517, which in turn is a continuation-in-part of abandoned application Ser. No. 284,375, May 31, 1963. This application June 5, 1972, Ser. No. 260,000
Int. Cl. C08g *51/04, 51/08, 51/10*
U.S. Cl. 260—37 N 53 Claims

High molecular weight polyamide compositions reinforced with from about 2 to about 55% by volume small particle size crystalline filler and an organosilane coupling agent. Compositions have improved mechanical properties such as concurrent high modulus and high multiaxial impact strength. Also disclosed are processes for preparing the above compositions as well as articles of manufacture.

3,833,535

NON-DRIPPING FLAME RETARDANT GLASS REINFORCED POLYESTER RESINS

Allen D. Wambach, Pittsfield, Mass., assignor to General Electric Company

No Drawing. Filed Aug. 30, 1971, Ser. No. 176,316
Int. Cl. C08g *51/04*
U.S. Cl. 260—40 R 18 Claims

Non-dripping flame retardant thermoplastic molding compositions are provided comprising a normally flammable linear polyester, filamentous glass, a flame retardant agent and fumed colloidal silica. The use of the fumed colloidal silica controls dripping and permits the flame retardant agent to be used in amounts sufficient to render the compositions non-burning or self-extinguishing without detracting from their physical properties.

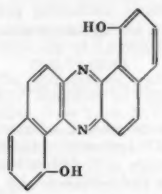
3,833,536

BULK DYEING OF THERMOPLASTICS

Werner Steinbeck, Cologne, and Hans-Samuel Bien, Burscheid, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Sept. 29, 1972, Ser. No. 293,557
Claims priority, application Germany, Sept. 30, 1971, P 21 48 850.6
Int. Cl. C08g *51/04*
U.S. Cl. 260—40 P 5 Claims

8,8'-dihydroxy-naphthazine of the formula



is suitable for the bulk dyeing of plastics, such as polycarbonates, polyamides. polymethacrylates, polystyrene, polyesters, polyolefines, polyvinylchloride and mixed polymerisates, e.g. from acrylonitrile, butadiene and styrene.

3,833,537

OXIDATIVELY STABLE POLYCARBONATE COMPOSITION

Donald B. G. Jaquiss, New Harmony, Ind., assignor to General Electric Company

No Drawing. Continuation-in-part of abandoned application Ser. No. 265,339, June 22, 1972. This application Mar. 27, 1973, Ser. No. 345,446
Int. Cl. C08f *45/58;* C08g *51/58*
U.S. Cl. 260—45.8 A 4 Claims

An oxidatively stable aromatic polycarbonate composition which is stabilized against degradation due to elevated temperatures by employing therewith a material which may be either a heavy metal salt of hypophosporous acid or the metal salt of hypophosphorous acid in combination with a particular epoxy compound. The amount of the metal salt of the hypophosphorous acid employed herein can range from about 0.005 to about 2.0 weight percent and the amount of epoxy can range from 0.01 to 1.0 weight percent all based on the weight of the aromatic polycarbonate composition.

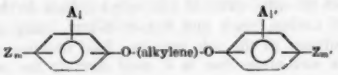
3,833,538

POLYSTYRENE PLASTIC COMPOSITIONS CONTAINING BIS-PHENOXY FLAME RETARDANTS

Arnold L. Anderson, Alma, Mich., assignor to Michigan Chemical Corporation, St. Louis, Mich.

No Drawing. Continuation-in-part of abandoned application Ser. No. 260,240, June 6, 1972. This application Feb. 8, 1973, Ser. No. 330,822
The portion of the term of the patent subsequent to May 14, 1991, has been disclaimed
Int. Cl. C08f *45/60*
U.S. Cl. 260—45.9 R 17 Claims

Plastic compositions containing polystyrenes and bisphenoxy compounds having the formula:



wherein Z is bromine, *m* and *m'* are integers having a value of 1–4, *i* and *i'* are integers having a value of 1 or 2, alkylene is a straight or branched chain alkylene group having from 1 to 6 carbon atoms and A is cyano, nitro, lower alkoxy, lower alkyl, fluorine, dialkyl amino, phenyl, halo-phenyl, benzyl or halo-benzyl.

3,833,539

POLYOLEFIN PLASTIC COMPOSITIONS CONTAINING BIS-PHENOXY FLAME-RETARDANT

Arnold L. Anderson, Alma, Mich., assignor to Michigan Chemical Corporation, St. Louis, Mich.

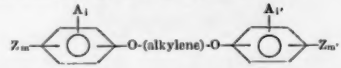
No Drawing. Continuation-in-part of abandoned application Ser. No. 260,240, June 6, 1972. This application Feb. 8, 1973, Ser. No. 330,781

The portion of the term of the patent subsequent to May 14, 1991, has been disclaimed

Int. Cl. C08f *45/60*

U.S. Cl. 260—45.9 R **17 Claims**

Plastic compositions containing polyolefins and bis-phenoxy compounds having the formula:



wherein Z is bromine, *m* and *m'* are integers having a value of 1–4, *i* and *i'* are integers having a value of 1 or 2, alkylene is a straight or branched chain alkylene group having from 1 to 6 carbon atoms and A is cyano, nitro, lower alkoxy, lower alkyl, fluorine, dialkylamino, phenyl, halo-phenyl, benzyl or halo-benzyl.

3,833,540

POLYURETHANE PLASTIC COMPOSITIONS CONTAINING HALOGENATED ARYL COMPOUNDS AS FLAME RETARDANTS

Arnold L. Anderson, Alma, Mich., assignor to Michigan Chemical Corporation, St. Louis, Mich.

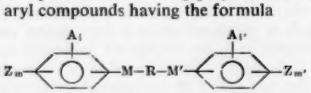
No Drawing. Continuation-in-part of abandoned application Ser. No. 260,240, June 6, 1972. This application Feb. 8, 1973, Ser. No. 330,785

The portion of the term of the patent subsequent to July 16, 1991, has been disclaimed

Int. Cl. C08g *51/60*

U.S. Cl. 260—45.9 R **29 Claims**

Plastic compositions containing polyurethanes and halogenated aryl compounds having the formula



wherein Z is bromine or chlorine, *m* and *m'* are integers having a value of 1–5, *i* and *i'* are integers having a value of 0–2, R is herein defined, M and M' are each independent and are from the group oxygen, nitrogen or sulfur with the proviso that M and M' cannot concurrently be oxygen in both cases, and A is chlorine, cyano, nitro, lower alkoxy, lower alkyl, fluorine, dialkylamino, phenyl, halo-phenyl, benzyl, or halo-benzyl.

3,833,541

MOLDING POWDER OF AGGREGATES CONTAINING CARBON BLACK EMBEDDED IN MATRIX OF VINYL CHLORIDE-ACETATE RESIN AND HEAT-STABILIZER

Ping Kang Shen, Leominster, Mass., assignor to Borden, Inc., Columbus, Ohio

No Drawing. Filed July 3, 1972, Ser. No. 268,811

Int. Cl. C08f *45/08, 45/24*

U.S. Cl. 260—42.53 **5 Claims**

A molding powder suitable for making articles such as phonograph records is prepared by suspension polymerization of vinyl chloride and vinyl acetate in the presence of carbon black and heat-stabilizer, using an azo-type initiator as the sole initiator. Said molding powder has the advantage that is it used directly for molding without the usual dust-encumbered steps of compounding resin and carbon black at the molding site.

3,833,542

MANUFACTURE OF THERMALLY STABILIZED POLYETHYLENE TEREPHTHALATE

Stanley David Lazarus, Petersburg, and Brian Armstead Dementi, Richmond, Va., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 167,809, July 30, 1971. This application Aug. 17, 1973, Ser. No. 389,298

Int. Cl. C08g *17/04, 51/62*

U.S. Cl. 260—45.75 C **1 Claim**

The preparation of linear high-molecular weight, film and fiber forming polyester wherein a polycarboxylic acid is reacted with a polyol; a stabilizing amount of dichloro (di-2-pyridylamine) copper (II)

$$[Cu\{NH(C_5H_4)_2\}Cl_2]$$

or bis(di-2-pyridylamine) copper (II) chloride

$$[Cu\{NH(C_5H_4N)_2\}_2]Cl_2$$

are incorporated therein to improve stability to carboxyl degradation.

3,833,543

TRIORGANOTIN SALTS OF THIOPHENE CARBOXYLIC ACIDS

Roger T. Guthrie, Westfield, and Bernard G. Kushlefsky, Edison, N.J., assignors to M & T Chemicals Inc., Greenwich, Conn.

No Drawing. Original application Sept. 11, 1972, Ser. No. 287,908. Divided and this application Aug. 31, 1973, Ser. No. 393,498

Int. Cl. C08f *45/62*

U.S. Cl. 260—45.75 K **5 Claims**

Triorganotin derivatives of mono- or dicarboxylic acids containing a thiophene ring structure are novel compounds that effectively inhibit the growth of microorganisms. The thiophene ring structure may contain inert substituents.

3,833,544

METHOD FOR MAKING POLYETHERIMIDES

Tohru Takekoshi and Jeannette S. Manello, Scotia, N.Y., assignors to General Electric Company

No Drawing. Filed June 22, 1973, Ser. No. 372,742

Int. Cl. C08g *20/32*

U.S. Cl. 260—47 CB **10 Claims**

A method for making polyetherimides is provided involving the reaction of aromatic bis(ether anhydride)s and organic diisocyanates in the presence of an alkali carbonate catalyst. Polymerization can be effected under melt conditions, or at elevated temperatures using a non-polar solvent. The polyetherimides can be injection molded to useful shapes.

3,833,545

FLUORINE-CONTAINING POLYURETHANES

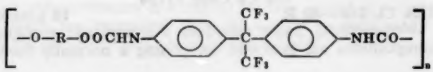
Boris Ruvimovich Livshits, Volgorgradsky prospekt 159, korpus 2, kv. 66; Tamara Khaimovna Dymshits, Maly Levshinsky pereulok 7, kv. 39; Svetlana Vasilievna Vinogradova, Belyaevo Bogorodskoe kvartal 48A, korpus 6AB, kv. 63; and Ivan Ljudvigovich Knunyants, Kotelnicheskaya 1/15, kv. 336, all of Moscow, U.S.S.R.

No Drawing. Continuation of abandoned application Ser. No. 136,243, Apr. 21, 1971. This application Aug. 15, 1973, Ser. No. 388,410

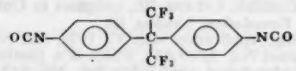
Int. Cl. C08g *22/04*

U.S. Cl. 260—47 CB **1 Claim**

A method of preparing fluorine-containing polyurethanes which comprise recurring units represented by the structural formula



wherein R represents a divalent residue of either glycols, hydroxyl-containing polyesters, bisphenols or fluorine-containing derivatives of said compounds and have degree of polymerization n=7–20, characterized in that they are products of the reaction of either glycols, hydroxyl-containing polyesters, bisphenols or fluorine-containing derivatives of said compounds with hexafluoroisopropylidene-p,p'-diphenyldiisocyanate represented by the formula



in organic media at a temperature ranging from 20 to 150° C. at a molar ratio said hydroxyl-containing reagents to diisocyanate equal to 1:1–1.5 respectively.

The proposed fluorine-containing polyurethanes, while preserving the properties inherent to conventional polyurethanes (high adhesion and cohesion, elasticity, wear-resistance, frost-resistance) are characterized in high hydrolytic stability and enhanced thermal stability.

3,833,546
METHOD FOR MAKING POLYETHERIMIDES

Tohru Takekoshi, Scotia, N.Y., and John E. Kochanowski, Pittsfield, Mass., assignors to General Electric Company

No Drawing. Continuation-in-part of application Ser. No. 319,372, Dec. 29, 1972. This application June 22, 1973, Ser. No. 372,743
Int. Cl. C08f *19/00*
U.S. Cl. 260—47 CP **12 Claims**

A process for making polyetherimides is provided by melt polymerizing a mixture of organic diamines and certain aromatic bis(etherdicarbonyl) compounds such as aromatic tetra-carboxylic acids and dianhydrides thereof. The polyetherimides can be made in a continuous manner. Fillers can be incorporated into the polyetherimides to produce high performance composites.

3,833,547
POLYDODECAMETHYLENE TEREPHTHALAMIDE COPOLYAMIDE

Alfred Steitz, Jr., deceased, late of Batavia, Ill., by Margaret Marie Steitz, executrix, Batavia, Ill., assignor to Standard Oil Company, Chicago, Ill.

No Drawing. Filed Oct. 20, 1970, Ser. No. 82,522
Int. Cl. C08g *20/20*
U.S. Cl. 260—78 R **10 Claims**

Polydodecamethylene terephthalamide copolymers and fibers prepared therefrom are disclosed. These copolymers are prepared by heating dodecamethylene diammonium terephthalate in an aqueous solution with dodecamethylene diammonium salts of modifying acid such as isophthalic acid, hexahydroterephthalic acid or 5-tertiarybutylisophthalic acid. These fibers, when woven into fabric, have improved aesthetics and wash and wear properties.

3,833,548
POLYAMIDES CONTAINING HYDANTOIN GROUPS AND/OR DIHYDROURACIL GROUPS

Jurgen Habermeier, Pfeffingen, and Daniel Porret, Binningen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed Feb. 23, 1973, Ser. No. 335,214
Claims priority, application Switzerland, Mar. 7, 1972, 3,313/72
Int. Cl. C08g *20/20*
U.S. Cl. 260—78 R **19 Claims**

Polyamides containing hydantoin and/or dihydrouracil groups are obtained by polycondensing in known manner dicarboxylic acids which contain hydantoin or dihydrouracil groups, or derivatives of such dicarboxylic acids, with diamines which can also contain hydantoin or dihydrouracil groups. In general, the products are tough, elastic and flexible, and are suitable for the manufacture of fibres. They can also be used as thermoplastic adhesives. Low molecular types can be used as hardeners for epoxide resins or isocyanates.

3,833,549
COPOLYMER OF CHLOROPRENE AND DICHLOROBUTADIENE

Sidney George Fogg, Ashtead, England, assignor to BP Chemicals International Limited, London, England

No Drawing. Filed July 20, 1972, Ser. No. 273,543
Claims priority, application Great Britain, July 21, 1971, 34,154/71; Jan. 19, 1972, 2,629/72
Int. Cl. C08f *15/06, 15/40*
U.S. Cl. 260—80.7 **6 Claims**

Copolymers of (a) chloroprene and (b) 1,3-dichlorobutadiene-1,3 or (b) a mixture of 1,3-dichlorobutadiene-1,3 and 2,3-dichlorobutadiene.

3,833,550
DEODORIZATION OF SULFIDE-CONTAINING POLYMERS

Donald Dante Carlos, Middletown, and Darrell D. Hicks, Jeffersontown, Ky., assignors to Celanese Coatings & Specialties Company, New York, N.Y.

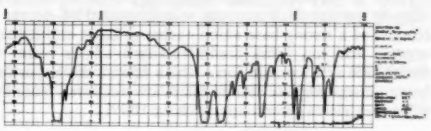
No Drawing. Continuation-in-part of abandoned application Ser. No. 224,586, Feb. 8, 1972. This application Aug. 8, 1973, Ser. No. 386,786
Int. Cl. C08f *47/00*
U.S. Cl. 260—80.75 **10 Claims**

Polymers of ethylenically-unsaturated monomers prepared in the presence of organic mercaptans, are deodorized by post-treating the polymers with a hydroperoxide or peroxyacid. The deodorized polymers find utility as casting and coating resins.

3,833,551
INTERPOLYMERIZATION OF ETHYLENE-PROPYLENE MONOMERS

Karl Ziegler, Heinz Martin, Heinz Breil, and Erhard Holzkamp, Mulheim (Ruhr), Germany, assignors to Karl Ziegler, Mulheim (Ruhr), Germany

Continuation of application Ser. No. 514,068, June 8, 1955, now Patent No. 3,342,358. This application Aug. 13, 1971, Ser. No. 171,744
Claims priority, application Germany, Aug. 3, 1954, 434,839
The portion of the term of the patent subsequent to Dec. 3, 1980, has been disclaimed
Int. Cl. C08f *1/32, 1/36, 15/04*
U.S. Cl. 260—88.2 **9 Claims**



The interpolymerization of ethylene and propylene alone or with other different monomers copolymerizable therewith in the presence of a Ziegler polymerization catalyst to form a solid polymer. The ethylene and propylene must be present in relative proportions ranging between 10:90% and 90:10% by weight. Preferred Ziegler catalysts are those formed by mixing an organo-metal compound, such as an organo aluminum compound, as for example, an aluminum trialkyl, or an aluminum alkyl halide with a compound such as a salt of a metal of Group IV–B, V–B, or VI–B of the Periodic System, including thorium and uranium.

3,833,552

WATER-SOLUBLE WHIPPABLE PROTEIN MATERIAL AND PROCESS FOR PRODUCING SAME

Cavit Akin, Oakbrook, Ill., assignor to Standard Oil Company, Chicago, Ill.

No Drawing. Filed Feb. 4, 1971, Ser. No. 112,800

Int. Cl. A23j *1/00, 1/18*

U.S. Cl. 260—112 R **11 Claims**

A water-soluble protein material, suitable for use in whipped food products, is derived from single-cell protein (SCP) material by treatment with aqueous acid under controlled temperature and time conditions.

3,833,553

METHOD OF PRODUCING α-L-ASPARTYL-L-PHENYLALANINE ALKYL ESTERS

Yasuo Ariyoshi, Tetsuo Yamatani, Noboru Uchiyama, Naohiko Yasuda, and Koji Toi, Kanagawa, and Naotake Sato, Tokyo, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

No Drawing. Continuation-in-part of application Ser. No. 108,555, Jan. 21, 1971, now Patent No. 3,798,206. This application July 5, 1972, Ser. No. 269,044

Claims priority, application Japan, Jan. 31, 1970, 45/8,742; Feb. 23, 1970, 45/15,401; June 26, 1970, 45/55,722; Dec. 30, 1970, 46/128,706; July 9, 1971, 46/50,877

The portion of the term of the patent subsequent to Mar. 19, 1991, has been disclaimed

Int. Cl. C07c *103/52;* **A23l** *1/26*

U.S. Cl. 260—112.5 **6 Claims**

When salts of L-aspartic anhydride with strong acids are reacted with lower alkyl esters of L-phenylalanine to produce the corresponding L-aspartyl-L-phenylalanine esters, a significant increase in yield and in the proportion of the α-isomer is obtained when the reaction mixture contains a sufficient amount of a weak acid, that is, an acid having a dissociation constant smaller than 3×10^{-2} at 25° C. The α-isomer is a known sweetener.

3,833,554

METHOD OF PURIFYING α-L-ASPARTYL-L-PHENYLALANINE LOWER ALKYL ESTERS OF PEPTIDE IMPURITIES

Yasuo Ariyoshi and Koji Toi, Yokohama, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

No Drawing. Filed May 16, 1973, Ser. No. 360,673

Claims priority, application Japan, May 25, 1972, 47/51,985

Int. Cl. A23l *1/26;* **C07c** *103/52*

U.S. Cl. 260—112.5 **5 Claims**

α-L-Aspartyl-L-phenylalanine lower alkyl esters can be purified of accompanying, chemically closely similar peptides by passing their aqueous solutions at pH 4–6 over a column of a strong-base anion exchange resin in the weak organic acid ion form, commercially available resins in the acetate and formate form which retains the impurities being illustrated. The desired esters are recovered from the effluent in yields closely approaching 100%.

3,833,555

POLYSACCHARIDE CYCLIC CARBAMATE CONTAINING COMPOUNDS

Melvin H. Keys, Sylvania, and Frank E. Semersky, Oregon, Ohio, assignors to Owens-Illinois, Inc.

No Drawing. Filed Oct. 11, 1972, Ser. No. 296,634

Int. Cl. C07c *3/00*

U.S. Cl. 260—209 R **6 Claims**

New compositions of matter comprising modified polysaccharides such as agarose, dextran, cellulose, carragheenan and starch in which a minor portion of the hydroxyl groups are substituted by an N-(2,5-dioxo-4-oxazolidinyl)-alkyl carbamate or N - (2,5 - dioxo-4-oxazolidinyl)-aralkyl carbamate radical are disclosed which are useful for insolubilizing enzymes.

3,833,556

HYBRIMYCIN ANTIBIOTICS AND DERIVATIVES

Wayne Thomas Shier, Kenneth L. Rinehart, Jr., and David Gottlieb, Urbana, Ill., assignors to University of Illinois Foundation, Urbana, Ill.

No Drawing. Application Mar. 17, 1970, Ser. No. 20,433, now Patent No. 3,669,838, which is a continuation-in-part of abandoned application Ser. No. 842,712, July 17, 1969. Divided and this application Aug. 26, 1971, Ser. No. 175,358

Int. Cl. C07c *129/18*

U.S. Cl. 260—210 AB **7 Claims**

The method of making an antibiotic containing an aminocyclitol subunit. A microorganism mutant, incapable of bisoynthesizing the aminocyclitol molecule but which molecule the unmutated microorganism biosynthesizes in the formation of an antibiotic when cultivated in a nutrient medium having no added aminocyclitol, is grown in the presence of an added aminocyclitol until substantial antibiotic activity is imparted to a culture medium, and the antibiotic is separated from the medium.

Streptomyces fradiae ATCC 21401 mutant grown in the presence of added streptamine gives hybrimycins A1 and A2, and when grown in the presence of 2-epistreptamine gives hybrimycins B1 and B2.

Streptomyces rimosus forma *paromomycinus* ATCC 21485 mutant grown in the presence of added streptamine gives hybrimycins C1 and C2.

The hybrimycins have antibiotic activity.

3,833,557

N-(AR-VINYLBENZYL)AZIRIDINES

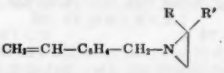
Donald A. Tomalia and Jerry D. De Vrieze, Midland, Mich., asssignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Apr. 24, 1972, Ser. No. 246,872

Int. Cl. C07d *23/06*

U.S. Cl. 260—239 E **3 Claims**

Novel N-(*m* or *p*-vinylbenzyl)aziridines are disclosed which correspond to the structural formula



wherein R and R′ are hydrogen or lower alkyl. They are highly reactive difunctional monomers which can be homopolymerized or copolymerized to form many useful polymers.

3,833,558

PRODUCTION OF AMPICILLIN

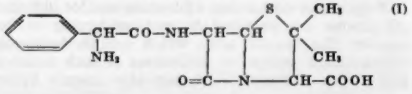
Jinnosuke Abe, Shizuoka-ken, Tetsuo Watanabe, Yokohama, and Teruo Take, Kentaro Fujimoto, Tadashiro Fujii, Yasue Hotta, Sadami Kobari, Fumihiro Ishimura, Nobuya Kitahora, and Mituru Fukushima, Shizuoka-ken, Japan, assignors to Toyo Jozo Kabushiki Kaisha, Shizuoka, Japan

No Drawing. Filed Mar. 1, 1971, Ser. No. 119,844

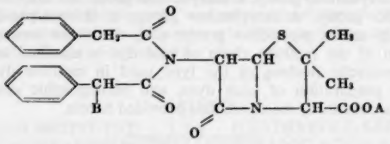
Int. Cl. C07d *99/16*

U.S. Cl. 260—239.1 **1 Claim**

A chemical process for the production of ampicillin and nontoxic salts thereof having the formula



in which a diacyl penicillin ester having the formula



(II)

wherein B is a protected amino group and A is a protective group for the carboxyl group, is subjected to dephenylacetylation, de-esterification and amination.

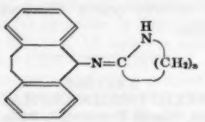
3,833,559

DIBENZOCYCLOHEPTENYL LACTAMIMIDES

J. Martin Grisar and Robert D. MacKenzie, Cincinnati, Ohio, assignors to Richardson-Merrell Inc., New York, N.Y.

No Drawing. Filed Jan. 5, 1973, Ser. No. 321,288
Int. Cl. C07d *27/04, 29/28, 41/08*
U.S. Cl. 260—239 B 5 Claims

Novel dibenzocycloheptenyl lactamimides of the following formula and pharmaceutically acceptable acid addition salts thereof are useful as diuretic agents, anti-inflammatory agents, and as anticoagulants.



In the above formula *n* represents an integer of from 3 to 11.

3,833,560

IMPROVEMENT IN THE PROCESS FOR REARRANGEMENT OF KETOXIMES BY USING ADHESION RESISTANT PARTIALLY NITRIDED BORIC ACID CATALYSTS

Otto Immel, Krefeld-Uerdingen, and Hans-Helmut Schwarz, Krefeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Original application Oct. 9, 1969, Ser. No. 865,194, now abandoned. Divided and this application Aug. 9, 1971, Ser. No. 170,276
Claims priority, application Germany, Oct. 12, 1968, P 18 02 887.0
The portion of the term of the patent subsequent to Apr. 6, 1988 has been disclaimed
Int. Cl. C07d *41/06*
U.S. Cl. 260—239.3 A 5 Claims

The process of rearranging cyclic ketoximes in the gaseous phase in the presence of boric acid catalyst to the corresponding lactams is improved by using the boric acid catalysts which are more abrasion resistant by partially nitriding the catalyst with a nitrogen-containing material e.g. ammonia urea.

3,833,561

METHOD FOR THE PREPARATION OF CARBOXYL GROUP CONTAINING 6-AMINO-PENICILLANIC ACID DERIVATIVES

Magda Huhn, Geza Toth, Gabor Resofszki, Eva Somfai, and Gabor Horvath, Budapest, Hungary, assignors to Chinoin Gyogyszer- es Vegyeszeti Termekek Gyara RT, Budapest, Hungary

No Drawing. Filed Aug. 17, 1971, Ser. No. 172,551
Claims priority, application Hungary, Aug. 18, 1970, CI–1,026
Int. Cl. C07d *99/16*
U.S. Cl. 260—239.1 6 Claims

A method of making α-carboxy benzylpenicillin and chlorobenzylpenicillin and like penicillin derivatives especially as the disodium salts, wherein α-amino benzylpenicillin or 6-APA is reacted in weak base or water and the disodium salt is thereupon obtained.

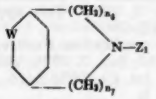
3,833,562

OXYGENATED AZABICYCLOALKANES

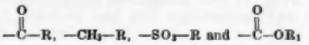
Gunther S. Fonken, Galesburg, Milton E. Herr, Kalamazoo, and Herbert C. Murray, Hickory Corners, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Continuation-in-part of application Ser. No. 666,991, Sept. 11, 1967, now Patent No. 3,556,943, which is a continuation-in-part of abandoned application Ser. No. 453,204, May 4, 1965. This application Oct. 26, 1970, Ser. No. 84,254
Int. Cl. C07d *39/00, 41/04*
U.S. Cl. 260—239 BA 3 Claims

Oxygenated azabicycloalkanes of the formula



wherein W is selected from the group consisting of carbonyl, hydroxymethylene, acyloxymethylene, methylhydroxymethylene, phenylhydroxymethylene, cyclicaminomethylene, and alkylenedioxymethylene; Z_1 is selected from the group consisting of hydrogen, cycloalkyl, cyanomethyl, 2-aminoethyl, 2-guanidinoethyl



in which R is aryl and R_1 is aralkyl, n_6 is 0 or 1 and n_7 is 0 or 1, and wherein n_6 and n_7 cannot each equal 0 simultaneously. The compounds of the above formula are particularly valuable as central nervous system stimulants and fungicidal agents.

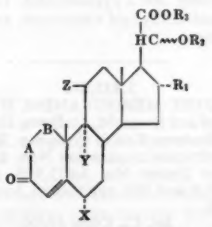
3,833,563

NOVEL PREGNANOIC ACID DERIVATIVES

Henry Laurent, Rudolf Wiechert, Klaus Prezewowsky, Helmut Hofmeister, Erich Gerhards, Klaus Mengel, and Karl Heinz Kolb, Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Germany

No Drawing. Continuation-in-part of application Ser. No. 284,710, Aug. 30, 1972. This application Oct. 3, 1972, Ser. No. 294,527
Claims priority, application Germany, Oct. 4, 1971, P 21 50 270.5; Feb. 22, 1972, P 22 09 298.4, P22 09 312.5
Int. Cl. C07c *173/00*
U.S. Cl. 260—239.55 D 73 Claims

Pregnanoic acid derivatives of the formula



wherein the group OR_2 is in the α_P- or β_P-position; X is hydrogen, halogen or methyl; Y is hydrogen or halogen;

Z is hydroxy or halogen having an atomic weight no greater than Y; R_1 is hydrogen or methyl; R_2 is hydrogen or acyl and R_3 is hydrogen, alkali metal or saturated or unsaturated unsubstituted or substituted hydrocarbon of 1–18 carbon atoms, or collectively R_2 and R_3 are dialkylmethylene or cycloalkylidene; and at least one of X, Y and R_1 are other than hydrogen; and —A—B— is

$$—CH_2—CH_2—, —CH=CH— \text{ or } —CCl=CH;$$

possess pronounced topical anti-inflammatory activity as well as being intermediates for the production of the corresponding 20-keto steroids.

3,833,564

NOVEL ESTERS AND THEIR PREPARATION

Jacques Martel, 15 Rue Douvillez, 93 Bondy, France, and Jean Buendia, 32 Avenue Foch, 94 Fontenay-sous-Bois, France

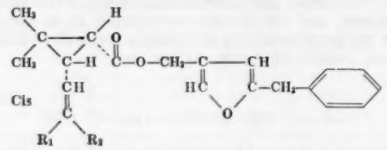
No Drawing. Continuation of abandoned application Ser. No. 9,081, Feb. 5, 1970. This application Aug. 17, 1972, Ser. No. 281,429

Claims priority, application France, Feb. 7, 1969, 6902885; Jan. 7, 1970, 7000401

Int. Cl. C07d *5/16*

U.S. Cl. 260—240 R **7 Claims**

Racemates of 5-benzyl-3-furyl-methyl esters of cis-3,3-dimethyl - 2-(2′-R_1-R2′-R_2-vinyl)-cyclopropane-1-carboxylic acids or their 1R,2S or 1S,2R isomers of the formula



I

wherein R_1 is selected from the group consisting of alkyl of 1 to 6 carbon atoms, aryl and phenylalkyl of 7 to 9 carbon atoms and R_2 is selected from the group consisting of alkyl of 1 to 6 carbon atoms, aryl, phenylalkyl of 7 to 9 carbon atoms and alkoxycarbonyl and R_1 and R_2 taken together with the carbon atom to which they are attached form a carbon homocyclic of 3 to 7 carbon atoms which may be saturated or unsaturated or substituted or not which possess utility in agriculture and in the home as insecticides and their preparation.

3,833,565

PHENYLANTIMONY BIS(2-PYRIDINETHIOL 1-OXIDE)

John Downing Curry, Oxford, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Filed Sept. 29, 1972, Ser. No. 293,633

The portion of the term of the patent subsequent to Aug. 21, 1990, has been disclaimed

Int. Cl. C07d *31/50*

U.S. Cl. 260—270 **1 Claim**

Phenylantimony bis(2-pyridinethiol 1-oxide), a new antibacterial and antifungal compound, and compositions containing same.

3,833,566

NOVEL MEROCYANINE DYES

Roy A. Jeffreys and Susan M. Mellows, Harrow, England, assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Original application Nov. 2, 1970, Ser. No. 86,316, now Patent No. 3,672,905, dated June 27, 1972. Divided and this application Apr. 27, 1972, Ser. No. 248,296

Int. Cl. C09b *23/00*

U.S. Cl. 260—240.1 **4 Claims**

Novel methine dyes are provided in which one terminal carbon atom of the methine chain of the dye has two groups attached thereto, said groups being selected from a dialkylamino group, a diarylamino group, an alkylarylamino group, a morpholino group, a thiomorpholino group and a piperidino group; and, the other terminal atom of the methine chain of said dye is attached to a heterocyclic nucleus of the type used in methine dyes. The preparation of such dyes, and photographic emulsions containing them, are also provided herein.

3,833,567

PHENOTHIAZINES

Edgar Eriksoo, Hans Jacob Fex, and Knut Bertil Hogberg, Halsingborg, Henri Rene Mollberg, Paarp, Oskar Adolf Rohte, Raa, and Paul Hans Otto Josef Kneip, deceased, late of Halsingborg, Sweden, by Ruth Kneip, Lund, Sweden, legal representative, assignors to Aktiebolaget Lee, Halsingborg, Sweden

No Drawing. Continuation-in-part of application Ser. No. 719,665, Apr. 8, 1968, now Patent No. 3,637,660. This application Oct. 1, 1971, Ser. No. 185,879

Int. Cl. C07d *93/14*

U.S. Cl. 260—243 A **6 Claims**

Benzoylalkylaminoalkylphenothiazine derivatives of therapeutic interest, compositions containing such derivatives, and method of treating with such compositions, are disclosed. These compounds have para-sympatholytic, sympathomimetic and sedative activity useful in the treatment of central nervous system disorders, especially endogenic depressions.

3,833,568

HETEROCYCLIC UREIDOCEPHALOSPORINS

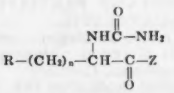
Joseph E. Dolfini, North Brunswick, Jack Bernstein, New Brunswick, and Raymond C. Erickson, Metuchen, N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

No Drawing. Filed Nov. 27, 1970, Ser. No. 93,490

Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C **3 Claims**

Compounds of the formula



wherein R is a furyl, pyridyl, pyrryl, or thienyl radical, or a substituted derivative thereof; *n* is 0, 1, or 2; and Z is the residue of the 7-ACA or of the 7-ADCA moiety, are effective antibacterial agents.

3,833,569

THIAZINYL DERIVATIVES OF O-PHENYLENEDIAMINES

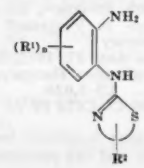
Venkatachala L. Narayanan, Hightstown, and Rudiger D. Haugwitz, Titusville, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

No Drawing. Original application Feb. 28, 1972, Ser. No. 230,121. Divided and this application Mar. 5, 1973, Ser. No. 338,002

Int. Cl. C07d *93/06*

U.S. Cl. 260—243 R **4 Claims**

Thiazolinyl and thiazinyl derivatives of *o*-phenylenediamines are provided having the structure



wherein R^1, R^2 and n are as defined hereinafter and which are useful as disinfectants, and as starting materials in the preparation of benzimidazoles which are useful as anthelmintic agents, and also dyes.

3,833,570

7-(3-SUBSTITUTED - 1,2,4 - OXADIAZOLE-5-ONE-4-ACETAMIDO)CEPHALOSPORANIC ACIDS AND DERIVATIVES THEREOF

Charles Truman Holdrege, Camillus, N.Y., assignor to Bristol-Myers Company, New York, N.Y.

No Drawing. Original application Aug. 12, 1970, Ser. No. 63,314, now Patent No. 3,692,779, dated Sept. 19, 1972. Divided and this application Aug. 31, 1972, Ser. No. 285,179

Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C **12 Claims**

6 - [N - (substituted - imidoyl)aminoacetamido]cephalosporanic acids and their salts and the corresponding betaines and desacetoxy derivatives are valuable as antibacterial agents, nutritional supplements in animal feeds, therapeutic agents in poultry and animals, including man, and are especially useful in the treatment of infectious diseases caused by Gram-positive and Gram-negative bacteria. 6 - [N - Phenylacetimidoyl)aminoacetamido]cephalosporanic acid, a preferred embodiment of the invention, is prepared for example, by Raney nickel hydrogenation (50 p.s.i., R.T.) of an aqueous solution of sodium 7 - (3 - benzyl - 1,2,4 - oxadiazole - 5 - one - 4 - acetamido)cephalosporanate which is prepared in turn by reaction of 7 - aminocephalosporanic acid with 3 - benzyl-1,2,4-oxadiazole-5-one-4-acetyl chloride.

3,833,571

2-PHENOXYALKANOIC ACID ESTERS AS ANTICHOLESTEROL AGENTS

Norman H. Grant, Wynnewood, and Harvey E. Alburn, West Chester, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Division of applications Ser. No. 182,260, Sept. 20, 1971, now Patent No. 3,769,431, and Ser. No. 182,235, Sept. 20, 1971, now Patent No. 3,759,950, which both in turn are a division of application Ser. No. 737,837, June 18, 1969, now Patent No. 3,717,669. Divided and this application Apr. 6, 1973, Ser. No. 348,789

Int. Cl. A61k *27/00*

U.S. Cl. 424—274 **3 Claims**

This invention concerns 2-phenoxyalkanoic acid esters which are pharmacologically active as anticholesterol agents.

3,833,572

PREPARATION OF CEPHALOSPORINS HAVING A SUBSTITUTED METHYL GROUP AT POSITION-3 BY REACTION OF A 3-HALOMETHYL CEPHALOSPORIN WITH AN ONIUM SALT

John Colin Clark, Gerrards Cross, and Joseph Elks, London, England, assignors to Glaxo Laboratories Limited, Greenford, England

No Drawing. Filed Jan. 21, 1972, Ser. No. 219,858

Claims priority, application Great Britain, Dec. 22, 1971, 3,202/71

Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C **10 Claims**

A process for preparing cephalosporin compounds having a substituted methyl group at the 3-position which comprises reacting a corresponding cephalosporin compound having a different substituted methyl group at the 3-position with an onium salt which is soluble in aprotic media, the anion of the onium salt corresponding to the desired methyl substituent.

3,833,573

PHENOTHIAZINE DERIVATIVES

Daniel Farge, Thiais, and Mayer Naoum Messer, Bievres, France, assignors to Rhone-Poulenc S.A., Paris, France

No Drawing. Filed Mar. 1, 1972, Ser. No. 231,014

Claims priority, application France, Mar. 3, 1971, 7107286

Int. Cl. C07d *93/14*

U.S. Cl. 260—243 A **1 Claim**

(7-Hydroxy-3-phenothiazinyl)alkanoic acids—the numbering of the phenothiazine ring being in accordance with Beilstein—are prepared by a new multi-stage process involving reaction of 2,5-dihydroxy-thiophenol with a nitrophenyl-alkanoic acid, reduction of the resulting [3-nitro-4-(2,5 - dihydroxy - phenylthio)phenyl]alkanoic acid to the corresponding amino-diphenolic compound, oxidation of the amino-diphenol to the corresponding quinone which cyclises spontaneously into a (7-oxo-3-phenothiazinyl)alkanoic acid, and reduction of the said acid to a (7-hydroxy-3-phenothiazinyl)alkanoic acid. The products are useful as starting materials for the preparation of alkyl esters of (7-alkoxy-3-phenothiazinyl)alkanoic acids, from which therapeutically useful phenothiazine derivatives can be obtained.

3,833,574

BENZIMIDAZOLINONE COMPOUNDS

Rudiger D. Haugwitz, Titusville, and Venkatachala L. Narayanan, Hightstown, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

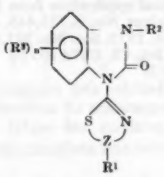
No Drawing. Original application July 31, 1972, Ser. No. 276,507. Divided and this application Nov. 6, 1973, Ser. No. 413,287

Claims priority, application Canada, July 18, 1973, 176,701

Int. Cl. C07d *93/06*

U.S. Cl. 260—243 R **3 Claims**

Benzimidazolinone compounds which exhibit antiinflammatory activity have the following formula



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wherein

Z is ethylene or propylene;

R^1 is hydrogen, methyl, ethyl, phenyl, nitrophenyl, benzyl, phenethyl, tolyl or xylyl;

R^2 is hydrogen; alkyl of from 1 to 5 carbons; benzyl; nitrobenzyl; phenethyl; nitrophenethyl;

wherein Z and R^1 are as defined above; alkoxycarbonyl wherein the alkoxy radical is from 1 to 10 carbon atoms; phenoxycarbonyl; or substituted phenoxycarbonyl wherein the substituent is nitro, halo or alkyl of from 1 to 5 carbons; acyl of from 2 to 6 carbon atoms; benzoyl or substituted benzoyl wherein the substituent is halogen or alkyl of from 1 to 3 carbons; symmetrically dialkyl-substituted carbamoyl wherein the alkyl radical has from 1 to 3 carbons; and dialkylamino-alkylene wherein the dialkyl radicals have from 1 to 3 carbons and the alkylene radical has 2 or 3 carbons;

R^3 is hydrogen, halogen, nitro, cyano, trifluoromethyl, alkyl of from 1 to 3 carbon atoms, alkoxy of from 1 to 3 carbon atoms, amino, dialkylamino wherein the alkyl radical has from 1 to 3 carbon atoms, alkanoyl of from 2 to 6 carbons, alkylamido of from 2 to 6 carbons, or benzoyl; and

n is 0, 1 or 2.

3,833,575

OXAZINOINDOLE- AND THIAZINOINDOLE DERIVATIVES

Christopher A. Demerson, Leslie G. Humber, George Santroch, Thomas A. Dobson, and Ivo Jirkovsky, Montreal, Quebec, Canada, assignors to Ayerst, McKenna and Harrison Limited, Montreal, Quebec, Canada

No Drawing. Filed Feb. 14, 1972, Ser. No. 226,287

Int. Cl. C07d *87/38*

U.S. Cl. 260—243 R **1 Claim**

Oxazinoindole derivatives characterized by having an amino(lower)alkyl radical attached to the 1 position of a 1H-1,4-oxazino[4,3-a]indole nucleus are disclosed. The amino portion of the amino(lower)alkyl radical may be further substituted with one or two lower alkyl groups or incorporated in a heterocyclic amine radical. The derivatives are substituted further at positions 1 and 10 and may be optionally substituted at positions 3, 4, 6, 7, 8 and 9. The oxazinoindole derivatives of this invention are useful antidepressant and antiulcer agents. Methods for the preparation and use of these derivatives are also disclosed.

3,833,576

PROCESS FOR THE PREPARATION OF AROMATIC ETHERS AND INTERMEDIATES USEFUL THEREFOR

Albrecht Edenhofer, Riehen, and Hans Spiegelberg, Basel, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Original application June 14, 1971, Ser. No. 152,979, now Patent No. 3,723,445. Divided and this application Jan. 4, 1973, Ser. No. 321,068

Int. Cl. C07d *87/20*

U.S. Cl. 260—244 R **5 Claims**

Substituted acetanilides and oxazines, useful as intermediates in the preparation of aromatic ethers, are disclosed. The end products are useful as antiphlogistic, antiallergic, antitussive and analgesic agents.

3,833,577

HERBICIDAL OXADIAZINES AND THIADIAZINES

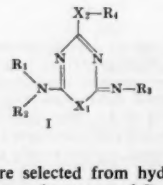
Kang Lin, Newark, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Nov. 13, 1972, Ser. No. 305,883

Int. Cl. C07d *87/52*

U.S. Cl. 260—244 **10 Claims**

Herbicidal oxadiazines and thiadiazines of the formula



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wherein

R_1, R_2 and R_3 are selected from hydrogen and certain organic radicals, at least one of R_1, R_2 and R_3 being an organic radical;

R_4 is selected from certain organic radicals; and

X_1 and X_2 are selected from oxygen and sulfur and salts of the above compounds.

Preparation of the compounds by cyclization of the appropriate allophanimidate with phosphoryl chloride ($POCl_3$).

An exemplary compound: 2-*tert*-butylimino-4-methylthio-6-*tert*-butylamino-2H-1,3,5-oxadiazine, phosphorodichloric acid salt.

3,833,578

PYRAZINOYLALKYLBENZENESULFONYLUREAS AND PROCESS FOR THEIR PREPARATION

Vittorio Ambrogi, Bresso, and Willy Logemann, Marcantonio Parenti, and Raffaele Tommasini, Milan, Italy, assignors to Carlo Erba S.p.A., Milan, Italy

No Drawing. Continuation-in-part of abandoned application Ser. No. 80,141, Oct. 12, 1970. This application June 11, 1971, Ser. No. 152,447

Claims priority, application Italy, Oct. 17, 1969, 23,489/69

Int. Cl. C07d *51/76*

U.S. Cl. 260—250 R **26 Claims**

New pyrazinoylalkylbenzenesulfonylureas and a process for their preparation are disclosed, for example N-(1-azacycloheptyl)-N'-{4-[β-(5-methyl-pyrazine-2-carboxamido)ethyl]benzenesulfonyl}urea, and N-(4-methylpiperidino)-N'-{4-[β-(5-methyl-pyrazine-2-carboxamido)ethyl]benzenesulfonyl}urea. These compounds are useful for their hypoglycemic activity.

3,833,579

4-CARBAMOYL PHTHALAZONES

Michiro Inoue, 26–3, 6-chome, Kokuryo-cho, Chofu-shi; Masayuki Ishikawa, 14–13, 3-chome, Akazutsumi, Setagaya-ku; Takashi Tsuchiya, 17–25, 5-chome, Minamikoiwa, Edogawa-ku; and Takio Shimamoto, 13 Kitamachi, Shinjuku-ku, all of Tokyo, Japan

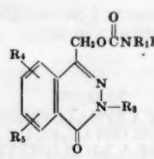
No Drawing. Filed Feb. 16, 1972, Ser. No. 226,960

Claims priority, application Japan, Feb. 23, 1971, 46/8,368; Feb. 27, 1971, 46/9,835, 46/9,836, 46/9,837; Aug. 5, 1971, 46/58,644; Aug. 10, 1971; 46/59,905, 46/59,906

Int. Cl. C07d *51/06*

U.S. Cl. 260—250 P **10 Claims**

4-Carbamoxymethyl-1-phthalazone derivatives represented by the general formula I:



wherein R_1 stands for a hydrogen atom or an alkyl group, R_2 stands for a hydrogen atom, an alkyl group which can be branched or cyclic, or an alkenyl, aryl, aralkyl, dialkylaminoalkyl, furfuryl, picolyl, or pyridyl group, R_3 stands for a hydrogen atom, an alkyl, aryl carbamoyl, N-alkylcarbamoyl, N,N-dialkylcarbamoyl, alkylsulfonyl, or arylsulfonyl group, R_4 stands for a hydrogen or halogen atom, an alkyl or alkoxy group, R_5 stands for a hydrogen or halogen atom, an alkyl, alkoxy, amino, acylamino, alkoxycarbonyl, or carbamoyl group, and R_1 can form together with R_2 a divalent alkylene group which can be interrupted by a hetero atom, and R_4 and R_5 can be present in any of the C–5, C–6, C–7, or C–8 positions of the phthalazone nucleus, and a process for their manufacture.

3,833,580
3-MORPHOLINO-N⁶-CYCLOHEXYLCARBONYL SYDNONIMINE

Manfred Gotz, Hudson, Quebec, Canada, Karl Zeile, Ingelheim am Rhein, Germany, Kurt Freter, Beaconsfield, Quebec, Canada, and Gisela Wehlmann, Wiesbaden-Sonnenberg, Germany, assignors to Boehringer Ingelheim G.m.b.H., Ingelheim am Rhein, Germany

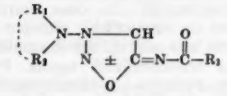
No Drawing. Continuation-in-part of applications Ser. No. 658,610, Aug. 7, 1967, and Ser. No. 809,392, Mar. 21, 1969, both now abandoned. This application Aug. 18, 1970, Ser. No. 64,817

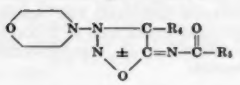
Claims priority, application Germany, Aug. 9, 1966, B 88,408; Mar. 26, 1968, P 17 70 061.7; Aug. 22, 1969, P 19 42 854.7

Int. Cl. C07d *87/40*

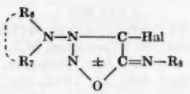
U.S. Cl. 260—247.2 A 1 Claim

Compounds of the formula





and



wherein

R_1 is methyl, allyl or phenyl-lower alkyl,

R_2 is methyl or allyl,

R_1 and R_2, together with each other and the nitrogen atoms to which they are attached, are piperidino, hexamethyleneimino or tetrahydroisoquinolino,

R_3 is methyl, cyclohexyl, lower alkoxy, phenyl, phenoxy, pyridyl or 5-nitro-furyl,

R_4 is hydrogen, chlorine, bromine or iodine,

R_5 is cyclohexyl or lower alkoxy,

R_6 and R_7 are each methyl or, together with each other and the nitrogen atom to which they are attached, piperidino, N'-methyl-piperazino or, when R_8 is hydrogen, morpholino,

R_8 is hydrogen, acetyl, cyclohexylcarbonyl, lower alkoxycarbonyl or phenoxycarbonyl, and

Hal is chlorine, bromine or iodine,

and their non-toxic, pharmacologically acceptable acid addition salts; the compounds as well as the salts are useful as hypotensives in warm-blooded animals.

3,833,581
VAPOR PHASE SUBSTITUTION FLUORINATION OF AROMATICS WITH XENON DIFLUORIDE

Donald R. MacKenzie, Bellport, Jack Fajer, Brookhaven, and Robert Smol, East Patchogue, N.Y., assignors to the United States of America as represented by the United States Atomic Energy Commission

No Drawing. Filed July 23, 1971, Ser. No. 165,591

Int. Cl. C07c *25/00*; C07d *51/76*

U.S. Cl. 260—250 R 2 Claims

The process of producing a fluorine-substituted aromatic compound comprising the step of reacting an aromatic compound in the vapor phase with xenon difluoride vapor at a moderate temperature on the order of about 200° C. at a mole ratio of xenon difluoride to said aromatic compound of no greater than 1.

3,833,582
HERBICIDAL 1H-PYRAZOLO[3,4-d]PYRIMIDIN-4-ONES

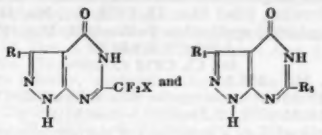
Beryl W. Dominy, Groton, Conn., assignor to Pfizer Inc., New York, N.Y.

No Drawing. Filed Aug. 21, 1972, Ser. No. 282,383

Int. Cl. C07d *51/46*

U.S. Cl. 260—256.4 F 7 Claims

Herbicidal 1H-pyrazolo[3,4]pyrimidin-4-ones of the formulae



I II

or the alkali metal, ammonia, mono-, di- and trialkylamine salts thereof, wherein each of the alkyl groups has from 1 to 12 carbon atoms, wherein X is hydrogen, chloro, fluoro and $CR_2R_3R_4$ wherein each of R_2, R_3 and R_4 is hydrogen, chloro and fluoro; R_1 is hydrogen and alkyl of from 1 to 4 carbon atoms; and R_5 is alkyl of from 3 to 5 carbon atoms.

3,833,583
PERINONE DYESTUFFS

Dietmar Kalz, Cologne, and Gerhard Wolfrum, Opladen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

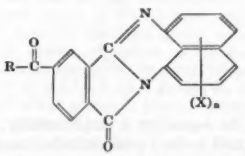
No Drawing. Filed Apr. 21, 1971, Ser. No. 136,234

Claims priority, application Germany, Apr. 25, 1970, P 20 20 299.7

Int. Cl. C07d *51/48*

U.S. Cl. 260—256.4 Q 3 Claims

Perinone dyestuff which is free from any sulphonic acid groups and corresponds to the general formula:



in which

R denotes a radical of an optionally substituted cyclic amine,

X stands for halogen, and

n represents 0, 1 or 2

as well as their production and use for the dyeing and printing of hydrophobic fibre materials.

3,833,584
4-SUBSTITUTED-AMINO-QUINAZOLINES AND NITRATES THEREOF

Lloyd P. Gabel and William R. J. Simpson, Morris Plains, N.J., assignors to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Application June 26, 1969, Ser. No. 838,050, now Patent No. 3,637,701, dated Jan. 25, 1972, which is a continuation-in-part of abandoned application Ser. No. 803,933, Mar. 3, 1969. Divided and this application Aug. 2, 1971, Ser. No. 168,446

Int. Cl. C07d *51/48*

U.S. Cl. 260—256.4 Q 7 Claims

The invention disclosed compounds of the class which are nitrates of 4-substituted-amino-quinazolines, e.g., 4-(2-hydroxyethyl)amino - 6,7 - dimethoxyquinazoline nitrate, having pharmacological activity in animals and useful, for

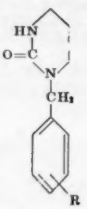
example, as hypotensive and anti-anginal agents. Also disclosed are the hydroxy intermediates useful in preparation of said nitrates.

3,833,585
(5R,8R)-8-(3-AZA-BICYCLO[3,2,2]NONAN-3-YLMETHYL)-6-METHYLERGOLENE
Paul Stadler, Biel-Benken, and Peter Stutz, Reinach, Switzerland, assignors to Sandoz Ltd., Basel, Switzerland
No Drawing. Filed Mar. 15, 1973, Ser. No. 341,510
Claims priority, application Switzerland, Mar. 17, 1972, 4,043/72, 4,044/72
Int. Cl. C07d *43/20*
U.S. Cl. 260—285.5 **1 Claim**

This invention concerns the new compound, (5R,8R)-8 - (3-azabicyclo[3,2,2]nonan-3-ylmethyl) - 6 - methylergolene, useful as a sedative and sleep-promoting agent.

3,833,586
1-(SUBSTITUTED BENZYL) - 2-(1H)PYRIMIDONES AND 1-(SUBSTITUTED BENZYL)TETRAHYDRO-2-(1H)PYRIMIDONES
Thomas J. Schwan, Norwich, Leroy J. Honkomp and Alan W. Castellion, Oxford, and Richard H. Burns, Norwich, N.Y., assignors to Morton-Norwich Products, Inc., Norwich, N.Y.
No Drawing. Continuation of abandoned application Ser. No. 128,143, Mar. 25, 1971. This application Feb. 6, 1973, Ser. No. 330,113
Int. Cl. C07d *51/38*
U.S. Cl. 260—251 R **10 Claims**

Certain 1-(substituted benzyl)tetrahydro-2-(1H)pyrimidones of the formula:



wherein R in the 4-position is carbomethoxy, carboxy, or carboxamido, and in the 3-position trifluoromethyl possess pharmacological activity as anticonvulsants and tranquilizers.

The corresponding 1-(substituted benzyl)-2-(1H) pyrimidones are useful intermediates in their preparation.

3,833,587
6,7,8-TRIALKYL-QUINAZOLINES HAVING A HYDROXYALKYL BEARING 4 - AMINO FUNCTION
Lloyd P. Gabel, Morris Plains, and William R. J. Simpson, Hanover, N.J., assignors to Sandoz-Wander, Inc., Hanover, N.J.
No Drawing. Application Nov. 13, 1970, Ser. No. 89,472, now Patent No. 3,637,700, which is a continuation-in-part of abandoned application Ser. No. 870,439, Dec. 5, 1969. Divided and this application Sept. 15, 1971, Ser. No. 180,762
Int. Cl. C07d *51/48*
U.S. Cl. 260—256.4 Q **5 Claims**

Disclosed are compounds of the class of quinazolines substituted in the benzene ring portion of the quinazoline by trialkoxy and further substituted at the 4-position by an amino function bearing a hydroxyalkyl moiety, e.g., 4-(5-hydroxypentyl)amino - 6,7,8-trimethoxyquinazoline. The compounds have pharmacological activity in animals and are useful, for example, as hypotensive, coronary dilators and antianginal agents. The compounds are prepared from the corresponding 4-haloquinazolines by known procedures and are also useful in preparation of the corresponding hydroxy nitrates which are useful, e.g., as antianginal agents.

3,833,588
UNSATURATED-SUBSTITUTED TRICYCLIC QUINAZOLINONES
Goetz E. Hardtmann, Florham Park, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.
No Drawing. Continuation-in-part of abandoned application Ser. No. 247,435, Apr. 25, 1972. This application Mar. 2, 1973, Ser. No. 337,381
Int. Cl. C07d *51/48*
U.S. Cl. 260—256.4 F **17 Claims**

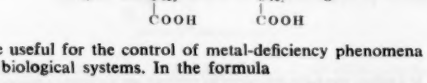
The compounds are pharmacologically active tricyclic quinazolinones of the class of imidazo[2,1-b]quinazolin-5 - ones, pyrimido[2,1 - b]quinazolin - 6 - ones and diazepino[2,1 - b]quinazolin - 7 - ones, bearing an unsaturated substituent on the available nitrogen of the quinazolinone portion and useful, for example, as anti-inflammatory and bronchodilator agents. Processes for preparation of said compounds include the reaction of a N-carboxy-anthranilic anhydride (an isatoic anhydride) with a cyclic pseudothiourea such as 2 - organomercapto-4,5 - dihydroimidazole or 2 - organomercapto - 3,4,5,6-tetrahydropyrimidine.

3,833,589
SUBSTITUTED SYDNONIMINE NITRATE ESTERS
William R. Simpson, Mendham, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.
No Drawing. Filed July 31, 1972, Ser. No. 276,396
Int. Cl. C07d *51/70*
U.S. Cl. 260—268 N **5 Claims**

Nitrate esters of sydnonimines, e.g. 3-(4-[β-hydroxyethyl]piperazino)-N^6-ethoxycarbonyl sydnonimine nitrate ester, are useful as anti-anginal agents.

3,833,590
CHELATES FOR THE CONTROL OF METAL-DEFICIENCY PHENOMENA IN BIOLOGICAL SYSTEMS
Joachim Dazzi, Riehen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.
No Drawing. Filed July 24, 1972, Ser. No. 274,377
Claims priority, application Switzerland, July 29, 1971, 11,172/71
Int. Cl. C07c *101/26*; C07f *15/02*
U.S. Cl. 260—270 R **14 Claims**

Heavy metal chelates of ethylenediaminetetraacetic acid derivatives



(I)

are useful for the control of metal-deficiency phenomena in biological systems. In the formula

R represents the phenyl or naphthyl radical which can be substituted by halogen, hydroxy, mercapto, nitro, cyano, thiocyano, alkyl, alkoxy, halogenoalkyl, acyl, acylamino, acyloxy, carboxyl, alkoxycarbonyl, carbamoyl, pyridoylamino, N-carboxyalkyl-carbamoyl, sulpho, sulphamoyl, mono- or dialkylated or phenylated sulphamoyl which can also carry one of the groups

$$—CH_2—CH_2—SO_3H \text{ or } —CH_2—COOH,$$

alkylsulphonyl, alkoxysulphonyl, or by an optionally hydroxy-containing phenylsulphonyl or phenoxysulphonyl; or wherein R represents the pyridine or quinoline radical which can be substituted by halogen, hydroxy, alkyl, or carbamoyl.

3,833,591

1,3,4,5 - TETRAHYDROPYRROLO[4,3,2-d,e]ISOQUINOLINES AND RELATED COMPOUNDS

James M. McManus, Old Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.

No Drawing. Filed Feb. 23, 1972, Ser. No. 228,743
Int. Cl. C07d 57/04
U.S. Cl. 260—288 R 7 Claims

A series of novel tricyclicazaindole compounds have been prepared by condensing the appropriate 4-aminoalkylindole or a corresponding 4-aminoethoxyindole with a suitable aldehyde reagent. The resulting tricyclic derivatives are found to be useful as oral hypoglycemic agents. Preferred member compounds include 1,3,4,5-tetrahydro - 3 - isopropylpyrrolo[4,3,2 - d,e]isoquinoline, 3,4,5,6-tetrahydro-3-isopropyl - 8,10 - dimethoxy-1H-azacino[3,4,5-c,d]indole and 3,4,5,6-tetrahydro-3-isopropyl-8-methoxy-1H - 1,4 - oxazocino[6,7,8-c,d]indole, and their pharmaceutically acceptable acid addition salts.

3,833,592

TROPANYL α,α-DIPHENYL-α-FLUOROACETATE ESTERS

Zinon B. Papanastassiou, Lexington, and Edward R. Atkinson and Donna D. McRitchie, Wellesley, Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.

No Drawing. Filed May 31, 1966, Ser. No. 553,728
Int. Cl. C07d 43/06
U.S. Cl. 260—292 3 Claims

2-, 3-, or 6-(8-R_3-nortropanyl) α,α-diphenyl-α-fluoroacetate esters having anticholinergic activity and prepared by transesterification of a lower-alkyl α,α-diphenyl-α-fluoroacetate with a 2-, 3-, or 6-(8-R_3-nortropanol).

3,833,593

3-(2-CHLOROETHYL)-4-PIPERIDINEACETIC ACID AND ESTERS THEREOF

Guenter Grethe, North Caldwell, and Milan Radoje Uskokovic, Upper Montclair, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Continuation-in-part of abandoned application Ser. No. 100,370, Dec. 21, 1970. This application June 5, 1973, Ser. No. 367,307
Int. Cl. C07d 29/24
U.S. Cl. 260—293.77 8 Claims

Cis or *trans* 2-(1-acyl-3-vinyl-4-piperidine)acetic acid esters and *cis* or *trans* 3-(1-acyl-3-vinyl-4-piperidine)propionic acid esters, antipodes and racemates thereof, are prepared, inter alia, from the corresponding *cis* or *trans* 2- or 3-[1-acyl-3-(2-chloroethyl)-4-piperidine] acetic or propionic acid esters, respectively. The *cis* or *trans* 2- or 3-(1-acyl-3-vinyl-4-piperidine)acetic or propionic acid esters are useful as intermediates for the synthesis of quinine and quinidine and analogs and stereoisomers thereof.

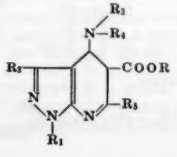
3,833,594

AMINO DERIVATIVES OF PYRAZOLOPYRIDINE CARBOXYLIC ACIDS AND ESTERS

Hans Hoehn, Tegernheim, and Theodor Denzel, Nuremberg, Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

No Drawing. Application Aug. 5, 1971, Ser. No. 169,536, now Patent No. 3,755,340, which is a continuation-in-part of abandoned application Ser. No. 41,568, May 28, 1970. Divided and this application June 11, 1973, Ser. No. 368,562
Int. Cl. C07d 49/18
U.S. Cl. 260—293.6 8 Claims

New amino derivatives of pyrazolo[3,4-b]pyridine-5-carboxylic acids and esters have the general formula



They are useful as ataractic, analgesic and antiinflammatory agents. In addition, the new compounds increase the intracellular concentration of adenosine-3′,5′-cyclic monophosphate.

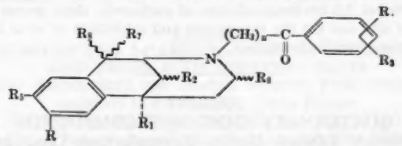
3,833,595

2-AROYLALKYL BENZOMORPHANS

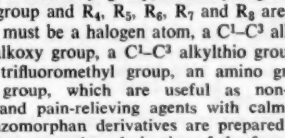
Toshio Atsumi, Kenji Kobayashi, and Yoshiaki Takebayashi, Takarazuka, and Hisao Yamamoto, Nishinomiya, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

No Drawing. Continuation-in-part of application Ser. No. 883,319, Dec. 8, 1969. This application Aug. 10, 1971, Ser. No. 170,640
Claims priority, application Japan, Dec. 26, 1968, 43/96,270, 43/96,271; Aug. 14, 1970, 45/71,637, 45/71,638; Sept. 17, 1970, 45/81,810, 45/81,811; Oct. 20, 1970, 45/92,611, 45/96,301; Dec. 8, 1970, 45/109,972, 45/109,973; Dec. 17, 1970, 45/114,363; Dec. 24, 1970, 45/130,369; Dec. 28, 1970, 46/129,967, 46/129,968; Jan. 29, 1971, 46/3,397; Dec. 1, 1971, 46/3,900
Int. Cl. C07d 39/00
U.S. Cl. 260—293.54 44 Claims

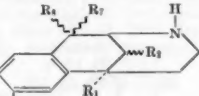
Benzomorphan derivatives of the formula:



wherein R is a hydrogen atom, a C^1–C^3 alkoxy group, an acyloxy group, a hydroxy group, a nitro group, a halogen atom, a cyano group, an amino group, a carboxyl group, a carbamoyl group or a sulfo group; R_1 is a hydrogen atom, a C^1–C^3 alkyl group or a group of the formula, $(C_mH_{(2m-p)+1})$—$(R_9)_p$ (wherein m is an integer of 1–6; p is an integer of 1–2, and R_9 is a hydroxyl group or a C^1–C^3 alkoxy group); R_2 is a hydrogen atom or a C^1–C^3 alkyl group; R_3 and R_4 are independently a hydrogen atom, a halogen atom, a C^1–C^3 alkyl group, a C^1–C^3 alkoxy group, a C^1–C^3 alkylthio group, a nitro group, a trifluoromethyl group, an amino group or a hydroxyl group; R_5 is a hydrogen atom or a methyl group; R_6 is a hydrogen atom or a C^1–C^3 alkyl group; R_7 is a hydrogen atom, a C^1–C^3 alkyl group, a phenyl group or a C^1–C^3 alkoxyphenyl group; R_8 is a hydrogen atom or a hydroxyl group, or R_7 and R_8 may form a C^1–C^3 alkylidene group or a carbonyl group together with a carbon atom to which these substituents are bonded; and n is an integer of 2–4, provided that, when n is an integer of 2, R_1 and R_2 are a methyl group, R is a hydrogen atom or a hydroxyl group and R_4, R_5, R_6, R_7 and R_8 are hydrogen atoms, R_3 must be a halogen atom, a C^1–C^3 alkyl group, a C^1–C^3 alkoxy group, a C^1–C^3 alkylthio group, a nitro group, a trifluoromethyl group, an amino group or a hydroxyl group, which are useful as non-addicting, analgesic and pain-relieving agents with calming effect. These benzomorphan derivatives are prepared by reacting a 6,7-benzomorphan derivative of the formula:

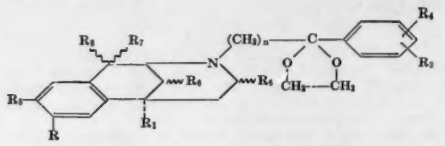


wherein R, R_1, R_2, R_5, R_6, R_7 and R_8 are as defined above, with a halogen derivative of the formula:



wherein R_3, R_4 and n are as defined above, X is a halogen atom and Y is an oxygen atom or an ethylenedioxy

group, and further, in the case of Y=ethylenedioxy group, by hydrolyzing the resulting ethylenedioxy derivative of the formula:



wherein R, R_1, R_2, R_3, R_4 R_5, R_6, R_7, R_8 and *n* are as defined above.

3,833,596
CARBAZOLE DERIVATIVES

William L. Albrecht, Cincinnati, Ohio, and Robert W. Fleming, Ann Arbor, Mich., assignors to Richardson-Merrell Inc., New York, N.Y.

No Drawing. Filed Dec. 21, 1972, Ser. No. 317,149
Int. Cl. C07d *29/28*
U.S. Cl. 260—293.61 **4 Claims**

Novel 3,6-bis-basic alkanes of carbazole, their preparation and use for the prevention and inhibition of viral infections are disclosed.

3,833,597
QUATERNARY AMMONIUM COMPOUNDS

Frederick Edward Hardy, Newcastle-upon-Tyne, and Peter Roscoe Hartley Speakman, Gateshead, England, assignors to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Filed May 25, 1972, Ser. No. 256,999
Claims priority, application Great Britain, June 9, 1971, 19,644/71
Int. Cl. C07c *103/30*; C07d *31/22*
U.S. Cl. 260—295 Q **8 Claims**

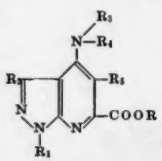
Quaternary ammonium imides having surface-active properties are described. The imides are able to exist in zwitterionic or cationic form and thus find applicability in the treatment of textiles and hard surfaces. Surface treating compositions containing quaternary ammonium imide and a pH buffering compound are described. Also described are methods for treating fabrics and hard surfaces.

3,833,598
AMINO DERIVATIVES OF PYRAZOLOPYRIDINE-6-CARBOXYLIC ACIDS AND ESTERS

Theodor Denzel, Nuremberg, and Hans Hoehn, Tegernheim, Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

No Drawing. Filed Dec. 29, 1972, Ser. No. 319,949
The portion of the term of the patent subsequent to Aug. 28, 1990, has been disclaimed
Int. Cl. C07d *31/36*
U.S. Cl. 260—295 F **10 Claims**

New amino derivatives of pyrazolo[3,4-b]pyridine-6-carboxylic acids and esters have the general formula



They are useful as central nervous system depressants and anti-inflammatory agents. In addition, the new compounds increase the intracellular concentration of adenosine-3',5'-cyclic monophosphate.

3,833,599
PROCESS FOR THE OXIDATION OF ALKYLPYRIDINES

Monique G. S. Hanotier-Bridoux and Jacques D. V. Hanotier, Brussels, Belgium, assignors to Labofina S.A., Brussels, Belgium

No Drawing. Filed Apr. 2, 1973, Ser. No. 347,049
Int. Cl. C07d *31/36*
U.S. Cl. 260—295 R **8 Claims**

A process for the oxidation of alkylpyridines of the formula

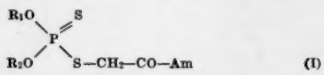
wherein R is an alkyl radical containing 1 to 2 carbon atoms and *m* is an integer of 1 to 4, into corresponding pyridinecarboxylic acids, which process comprises reacting said alkylpyridine with a cobalt salt in a molar ratio of alkylpyridine to cobalt salt of lower than 2 while maintaining such a concentration of cobaltic salt that $2x-A$ is between 0.1 and 1.5 *x* and A being respectively the molarity of cobaltic ions and of said cobalt salt in the reaction mixture, at a temperature of between 20 and 150° C., in an aliphatic carboxylic acid having from 2 to 4 carbon atoms and in the presence of molecular oxygen at a partial pressure of 0.2 to 20 atmospheres.

3,833,600
DITHIOPHOSPHATES

Werner Toepfl, Basel, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Continuation-in-part of applications Ser. No. 160,897 and Ser. No. 160,898, both July 8, 1971, which are a continuation-in-part of application Ser. No. 782,736, Dec. 10, 1968, all now abandoned. This application Jan. 2, 1973, Ser. No. 320,338
Int. Cl. C07d *29/36*
U.S. Cl. 260—293.85 **5 Claims**

New dithiophosphates of the formula I



(I)

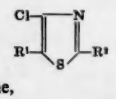
and their use as herbicides are disclosed. In formula I R_1 and R_2 are identical or different and each represents an alkyl or alkenyl or alkoxyalkyl radical with 1 to 5 carbon atoms, —CO—Am is an amide and Am is a piperidyl radical substituted by methyl or ethyl.

3,833,601
CERTAIN 4-CHLOROTHIAZOLES AND PROCESS FOR PREPARING SAME

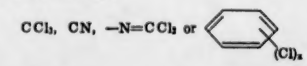
Günther Beck and Hans Holtschmidt, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Mar. 2, 1973, Ser. No. 337,611
Claims priority, application Germany, Mar. 22, 1972, P 22 13 865.4
Int. Cl. C07d *91/32*
U.S. Cl. 260—302 R **4 Claims**

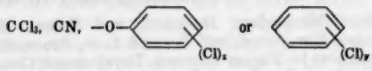
Chlorothiazoles having the formula:



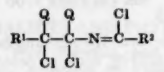
wherein R^1 is chlorine,



where x is 0, 1 or 2; and R^3 is chlorine,



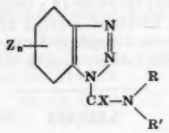
where x is as defined above and y is a number from 0 to 5 are prepared by reacting compounds having the formula:



wherein R^1 and R^2 are as defined above and Q is chlorine or together represent a C—C— bond; with substantially the stoichiometrically necessary quantity of sulphur at a temperature in the range of from 150 to 350° C. Such chlorothiazoles can be used for the production of plant protection agents, especially as insecticides.

3,833,602
N-CARBAMOYL- AND N-THIOCARBAMOYL-4,5,6,7-TETRAHYDROBENZTRIAZOLES
Karl Heinz Buchel, Wuppertal-Elberfeld, and Ingeborg Hammann, Cologne, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Apr. 4, 1972, Ser. No. 241,071
Claims priority, application Germany, Apr. 16, 1971, P 21 17 464.1
Int. Cl. A01n *9/12, 9/22;* **C07d** *55/04*
U.S. Cl. 260—308 B **5 Claims**

N-carbamoyl- and N-thiocarbamoyl-4,5,6,7-tetrahydrobenztriazoles of the general formula



(I)

in which

R is lower alkyl or optionally substituted phenyl,
R′ is R or hydrogen,
Z is alkyl, haloalkyl or halogen,
n is an integer from 0 to 4, and
X is oxygen or sulfur,

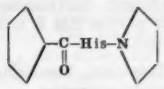
which possess insecticidal and acaricidal properties.

3,833,603
1-(α,α-DISUBSTITUTED 4-PHENOXYBENZYL)IMIDAZOLES
Karl-Heinz Buchel, Wilfried Draber, Erik Regel, and Axel Haberkorn, Wuppertal-Elberfeld, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Continuation-in-part of abandoned application Ser. No. 130,849, Apr. 2, 1971. This application Oct. 18, 1972, Ser. No. 298,599
Claims priority, application Germany, Apr. 9, 1970, P 20 16 839.2
Int. Cl. C07d *49/36*
U.S. Cl. 260—309 **16 Claims**

1 - (4-Phenoxybenzyl)imidazoles bearing a phenyl or alkyl group in the α-position and a second phenyl group in the α-position are effective agents against protozoa. The compounds, of which 1-[α-phenyl-α-(4-biphenylyl)-4-phenoxybenzyl]imidazole is a typical example, can be obtained from the reaction of imidazole and the appropriately substituted α,α-disubstituted-4-phenoxybenzyl halide.

3,833,604
HISTIDINE DERIVATIVES
Derek John Schafer, Beverley, England, assignor to Reckett & Colman Products Limited, Hull, Yorkshire, England
No Drawing. Filed Jan. 9, 1973, Ser. No. 322,124
Claims priority, application Great Britain, Jan. 20, 1972, 2,695/72
Int. Cl. C07d *49/36*
U.S. Cl. 260—309 **3 Claims**

The invention relates to a novel derivative of histidine of formula:

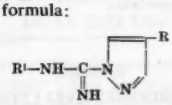


in which His is L-histidyl, and its pharmaceutically acceptable salts.

The novel compound and its salts with pharmaceutically acceptable acids are useful because of their inhibiting action on the hypothalamic thyrotropin releasing hormone (TRH).

3,833,605
SUBSTITUTED 1-CARBOXAMIDINE-PYRAZOLES AND THEIR ACID ADDITION SALTS
Isaac Karadavidoff and Michele Moreau, Paris, France, assignors to Fuveau S.A., Paris, France
No Drawing. Filed Apr. 26, 1972, Ser. No. 247,833
Claims priority, application France, Apr. 30, 1971, 7115592; Mar. 8, 1972, 7207995
Int. Cl. C07d *49/18*
U.S. Cl. 260—310 R **2 Claims**

Compounds of formula:



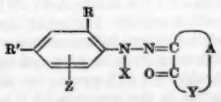
in which R represents a hydrogen atom or a lower alkyl group and R^1 represents a hydrogen atom, an alkyl or arylalkyl group and their therapeutic application as anti-inflammatory and analgesic agents, both R and R′ not being hydrogen.

3,833,606
PREPARATION OF INDAZOLES
Arthur Gaudens Mohan, Somerville, N.J., assignor to American Cyanamid Company, Stamford, Conn.
No Drawing. Filed June 13, 1972, Ser. No. 262,426
Int. Cl. C07d *49/18*
U.S. Cl. 260—310 C **8 Claims**

2-alkyl- and 2-aryl-2H-indazoles are prepared by heating an N-(o-nitrobenzylidene)amine in an inert solvent in the presence of iron carbonyl.

3,833,607
DIALKYLAMINOPHENYLHYDRAZONES
Edgar Enders, Cologne, Ferdinand Grewe, Burscheid, and Paul-Ernst Frohberger, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Jan. 31, 1972, Ser. No. 222,288
Claims priority, application Germany, Feb. 10, 1971, P 21 06 298.6
Int. Cl. C07d *27/08*
U.S. Cl. 260—326.5 FL **5 Claims**

Dialkylaminophenylhydrazones of the general formula



(I)

in which

A is an ethylene, propylene or butylene radical which may be substituted by alkyl of 1 to 3 carbon atoms,

X is hydrogen or acyl,

Y is oxygen, sulfur or the group >N—R'',

R'' is hydrogen, alkyl or alkenyl with up to 12 carbon atoms, aralkyl, cycloalkyl with 5 or 6 carbon atoms, aryl optionally substituted by halogen, methyl, methoxy, or acyl,

Z is hydrogen, halogen or acylamino, or alkyl or alkoxy with up to 4 carbon atoms, and

R and R' are hydrogen, dialkylamino or a —N-hetero radical, with the proviso that R and R' are not simultaneously hydrogen,

which possesses fungicidal, insecticidal, acaricidal bactericidal and yeasticidal properties.

3,833,608

INDOLE-3-METHANESULFONAMIDES

Clarence Stanley Rooney, Beaconsfield, Quebec, and Clarence Henry Gleason, Montreal, Quebec, Canada, assignors to Merck, Sharp & Dohme (I.A.), Rahway, N.J.

No Drawing. Original application Nov. 23, 1970, Ser. No. 92,210, now Patent No. 3,673,186. Divided and this application Sept. 15, 1972, Ser. No. 289,511

Int. Cl. C07d *27/56*

U.S. Cl. 260—326.12 R **5 Claims**

Derivatives of indole-3-acetamide and indole-3-methylsulfonyl compounds are prepared which have utility as skeletal muscle stimulants.

3,833,609

N(N'-MALEIMIDOMETHYL) CITRACONIMIDE

John R. Ladd, Ballston Lake, N.Y., assignor to General Electric Company, Schenectady, N.Y.

No Drawing. Filed Apr. 21, 1972, Ser. No. 246,287

Int. Cl. C07d *27/18*

U.S. Cl. 260—326.26 **1 Claim**

A method is provided for making a variety of N,N'-methylene bismaleimides by introducing boron trifluoride into a maleimide mixture containing either paraformaldehyde or methanol maleimide. The N,N'-methylene bismaleimides made by the subject method can be symmetrical or unsymmetrical and are useful for making polyimides.

3,833,610

3,5-DIOXO-2,3,5,6-TETRAHYDRO-(4H)-PYRANE AND THIOPYRANE-4-CARBOXANILIDES

Goetz E. Hardtmann, Florham Park, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Continuation-in-part of abandoned application Ser. No. 246,351, Apr. 21, 1972. This application Mar. 5, 1973, Ser. No. 338,302

Int. Cl. A61k *27/00;* **C07d** *65/04, 7/04*

U.S. Cl. 260—327 TH **9 Claims**

Disclosed are compounds of the class of 3,5-dioxo-2,3,5,6-tetrahydro-(4H)-pyrane and -thiopyrane-4-carboxanilides e.g. 3,5-dioxo-2,3,5,6-tetrahydro-(4H)-thiopyrane-4-carboxanilide, which exhibit biological activity and are useful, for example, as anti-inflammatory and anti-fungal agents. The compounds may be prepared by reacting 3,5-dioxo-2,3,5,6-tetrahydro-(4H)-pyrane or thiopyrane with a phenyl isocyanate in the presence of a base.

3,833,611

3,7-METHANO-BENZOXONIN COMPOUNDS

Raphael Mechoulam, Jerusalem, and Shlomo Houry, Ramat-Gan, Israel, and Bernard Loev, Broomall, Pa., assignors to Yissum Research Development Company, Jerusalem, Israel, and Smithkline Corporation, Philadelphia, Pa.

No Drawing. Filed Apr. 5, 1973, Ser. No. 348,423

Int. Cl. C07d *9/00*

U.S. Cl. 260—333 **3 Claims**

The compounds are 3,7-methano-benzoxonins having pharmacological activity such as central nervous system activity.

3,833,612

DERIVATIVES OF 5 - OXO - 1β-CYCLOPENTANE-HEPTANOIC ACID, 5-ETHYLENE ACETALS

Norman L. Wendler, Summit, David Taub, Metuchen, Harry L. Slates, Westfield, and Zbigniew S. Zelawski, Piscataway, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed Nov. 24, 1971, Ser. No. 201,979

Int. Cl. C07d *13/04*

U.S. Cl. 260—340.9 **2 Claims**

Racemic or optically active prostaglandin E_1 is synthesized from racemic or optically active precursors in good yield at the various steps from 3α,6,7,7α-tetrahydro-4-methyl-2-oxo - 1β - indaneheptanoic acid methyl ester proceeding through 2β - (2-carboxyethyl)-3β-hydroxy-5-oxo-1β-cyclopentaneheptanoic acid methyl ester, δ-lactone, 5-cyclic ethylene acetal, 2α-(2-carboxy-2-formylethyl)-3β-hydroxy-5-oxo-1β-cyclopentaneheptanoic acid methyl ester, δ-lactone, 5-cyclic ethylene acetal, 2α-(2-carboxy-2-oxoethyl)-3β-hydroxy-5-oxo-1β - cyclopentaneheptanoic acid methyl ester, δ-lactone, 5-cyclic ethylene acetal, and 3β-hydroxy-2α-(3-oxo-1-octenyl)-5-oxo-1β - cyclopentaneheptanoic acid methyl ester, 5-cyclic ethylene acetal.

3,833,613

PRODUCTION OF ESTERS

Peter Graham Spencer Field, London, England, assignor to Burmah Oil Trading Limited, London, England

No Drawing. Filed Nov. 2, 1972, Ser. No. 303,074

Claims priority, application Great Britain, Nov. 5, 1971, 51,563/71

Int. Cl. C07d *7/06, 9/00*

U.S. Cl. 260—343 **7 Claims**

A process for the production of cyclic esters comprises reacting a cyclic ketone and a hydroperoxide in the presence of a catalytic amount of metaboric acid, the anhydride thereof or an ester thereof in an inert diluent under substantially anhydrous conditions.

The cyclic esters are useful as intermediates in the production of corresponding lactams which are employed in the production of nylon.

3,833,614

PHTHALIDES AND NAPHTHALIDES

Myron S. Simon, West Newton, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

No Drawing. Filed Jan. 4, 1971, Ser. No. 103,865

Int. Cl. C07d *7/20*

U.S. Cl. 260—343.2 R **22 Claims**

This invention relates to 1-naphthol phthalein indicator dyes including phthalides and naphthalides wherein one

of the p-hydroxynaphthyl radicals is substituted with a hydrogen-bonding group on a carbon atom adjacent to the carbon atom containing the naphtholic —OH. In a preferred embodiment, both of the p-hydroxynaphthyl radicals are substituted with hydrogen-bonding groups. These indicator dyes, especially those of the preferred embodiment, possess a relatively high pKa.

3,833,615

NAPHTHALIDES AND PHTHALIDES

Myron S. Simon, West Newton, and David P. Waller, Arlington, Mass., assignors to Polaroid Corporation, Cambridge, Mass.

No Drawing. Filed Jan. 4, 1971, Ser. No. 103,864

Int. Cl. C07d *7/26*

U.S. Cl. 260—343.2 R **18 Claims**

This invention relates to phenol phthalein indicator dyes containing as the ring-closing moiety, a naphthalide group or a carboxyphthalide group possessing a carboxy substituent in either the 4- and/or 7-position of the phthalide ring. In a preferred embodiment, the phenol radicals are substituted with a hydrogen-bonding group on a carbon atom adjacent to the carbon atom containing the phenolic —OH. These dyes, due to the naphthalide or carboxyphthalide ring-closing moiety exhibit improved stability in highly alkaline media and when substituted with hydrogen-bonding groups as in the preferred embodiment, possess a relatively high pKa as well.

3,833,616

6a,10a-TRANS-6a,7,8,10a-TETRAHYDRO-DIBENZO(b,d)-PYRANS

Theodor Petrzilka, 6 Rigistrasse, Erlenbach, Switzerland

No Drawing. Continuation-in-part of abandoned application Ser. No. 760,055, Sept. 16, 1968. This application Feb. 1, 1971, Ser. No. 111,669

Int. Cl. C07d *7/20*

U.S. Cl. 260—345.3 **9 Claims**

This invention is directed to a process of producing (—)-1-hydroxy-3-n-amyl-6,6,9-trimethyl - 6a,10a - trans-6a,7,8,10a - tetrahydrodibenzo(b,d) - pyran and related pyrans from resorcinols, including intermediates therein. The pyrans produced by this invention possess psychotomimetic and analgesic activity.

3,833,617

BIS(DIBENZOPYRANS)

Jimmey L. Webb, Jonesville, N.Y., and Walter L. Hall, Mount Vernon, Ind., assignors to General Electric Company, Schenectady, N.Y.

No Drawing. Original application May 26, 1971, Ser. No. 147,162. Divided and this application Jan. 11, 1973, Ser. No. 322,780

Int. Cl. C07d *7/24*

U.S. Cl. 260—345.3 **7 Claims**

Bis(dibenzopyrans) prepared by reacting 2-phenylphenol and its higher homologues wherein the 6-position is substituted with a lower alkyl, including cycloalkyl, or phenyl, including lower alkyl substituted phenyl, substituent with bisketones are new chemical compounds. The bis(dibenzopyrans) are readily isomerized to the bisfluorenols. Since the latter compounds have two phenolic hydroxyl groups, they are useful in making polyesters, including polycarbonates, either as homopolymers or as copolymers with other dihydric phenols.

3,833,618

4-[HIGH MOLECULAR WEIGHT ALKYL-SUBSTITUTED CARBOPHENOXY] PHTHALIC ANHYDRIDE AND ANALOGOUS DIACID

Edmund J. Piasek, Chicago, and Imre Puskas, Glen Ellyn, Ill., assignors to Standard Oil Company, Chicago, Ill.

No Drawing. Original application Sept. 16, 1970, Ser. No. 72,831. Divided and this application Sept. 29, 1972, Ser. No. 293,647

Int. Cl. C07c *63/18, 69/76*

U.S. Cl. 260—346.3 **8 Claims**

Title compounds are novel oil-soluble anhydrides and their analogous diacids. The anhydrides are obtained by reaction of C_{30}–C_{214} alkyl-substituted phenol with 4-acid chloride of trimellitic anhydride which can be readily hydrolyzed with water to the analogous diacids. The title compounds are useful anti-rust and/or anti-wear addition agents for lubricants and as intermediate reactants with alcohols and amines for preparation of ester, amide and imide derivatives also useful as addition agents for lubricants, especially mineral oil based lubricants.

3,833,619

PROCESS FOR THE MANUFACTURE OF DIMETHYLMALEIC ANHYDRIDE

Marcus Baumann and Hans Bosshard, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed June 22, 1972, Ser. No. 265,383

Claims priority, application Switzerland, July 13, 1971, 10,264/71

Int. Cl. C07d *5/04*

U.S. Cl. 260—346.8 **7 Claims**

A new improved process for preparing dimethylmaleic anhydride is disclosed which comprises reacting certain heterocyclic primary amides or salts thereof with fumaric acid, maleic acid or a derivative thereof at temperatures above 70° C.

3,833,620

PRODUCTION OF CHENODEOXYCHOLIC ACID

William H. Saltzman, New Rochelle, N.Y., assignor to Intellectual Property Development Corporation, New Rochelle, N.Y.

No Drawing. Filed Nov. 16, 1972, Ser. No. 307,060

Int. Cl. C07c *169/48*

U.S. Cl. 260—397.1 **3 Claims**

This invention relates to novel methods of synthesizing 3α,7α-dihydroxy-5β-cholanic acid and novel intermediates therefor.

3,833,621

3-KETO-7(α,β)-LOWERALKYL-Δ^5 STEROIDS AND PROCESS FOR PREPARING SAME

Joyce F. Grunwell, Hamilton, and Harvey D. Benson and Vladimir Petrow, Cincinnati, Ohio, assignors to Richardson-Merrell Inc., New York, N.Y.

No Drawing. Filed Mar. 20, 1972, Ser. No. 236,186

Int. Cl. C07c *169/22, 169/34*

U.S. Cl. 260—397.4 **11 Claims**

Novel 7(α,β)-loweralkyl - 3 - keto-Δ^5-androstanes and 7(α,β) - loweralkyl-3-keto-Δ^5-pregnanes having anabolic, androgenic, claudogenic, progestational and anti-progestational properties are prepared by reacting 3-keto-4,6-dienic androstanes and pregnanes with organocopper reagents

such as dialkyllithium cuprate. The isomerization of these compounds to yield 7(α,β)-loweralkyl-3-keto-Δ^4-steroids is also described.

3,833,622

CRYSTALLINE 25-HYDROXYCHOLECALCIFEROL HYDRATE AND STRUCTURALLY RELATED COMPOUNDS

John C. Babcock and J Allan Campbell, Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed Mar. 17, 1969, Ser. No. 807,929

Int. Cl. C07c *171/10*

U.S. Cl. 260—397.2 13 Claims

This invention relates to 25-hydroxycholecalciferol, a biologically active metabolite of Vitamin D, and especially to its hydrate and structurally related compounds possessing Vitamin D activities and uses.

3,833,623

N-ACYL-O-HYDROCARBYLPHOSPHORO-AMIDOTHIOATE SALTS

Philip S. Magee, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed Dec. 21, 1972, Ser. No. 317,477

Int. Cl. C08h *3/00, 9/02*

U.S. Cl. 260—402.5 11 Claims

S-alkali metal and S-ammonium salts of N-acyl-O-hydrocarbylphosphoroamidothioates are prepared by reacting an N-acyl-O,O-dihydrocarbylphosphoroamidothioate with an alkali metal mercaptide or ammonium mercaptide.

3,833,624

OIL-SOLUBLE ESTERS OF MONOCARBOXYLIC ACIDS AND POLYHYDRIC OR AMINO-ALCOHOLS

John Fred Bork, Timberlake, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

No Drawing. Continuation of abandoned application Ser. No. 20,800, Mar. 18, 1970, which is a division of application Ser. No. 712,627, Mar. 13, 1968, now Patent No. 3,542,678. This application Nov. 22, 1971, Ser. No. 201,156

Int. Cl. C07c *69/32, 93/16;* C01m *1/24*

U.S. Cl. 260—404.5 15 Claims

Esters of monocarboxylic acids and polyhydric or aminoalcohols useful as additives for lubricants and fuels. The esters of a monocarboxylic acid having at least about fifty aliphatic carbon atoms exclusive of the carboxyl carbon atom and polyhydric alkanols constitute preferred embodiments.

3,833,625

PROCESS FOR THE SELECTIVE OXIDATION OF KETONES

Jean-Noel Marie Bertrand, Tervueren, and Joseph Marie Vaerman, Brussels, Belgium, assignors to Labofina S.A., Brussels, Belgium

No Drawing. Filed Oct. 27, 1971, Ser. No. 193,199

Claims priority, application Belgium, Jan. 4, 1971, 98,262

Int. Cl. C07c *51/28*

U.S. Cl. 260—408 11 Claims

A process for the oxidation of ketones in the liquid phase which comprises subjecting an asymmetrical ketone R—CO—R′, where R is a paraffinic or olefinic hydrocarbon radical containing at least 2 carbon atoms, substituted or not, and R′ is a saturated aliphatic radical containing not more than 2 carbon atoms, to oxidation in the presence of molecular oxygen at a partial pressure of 0.1 to 50 atmospheres and in the presence of a manganese salt, the molar ratio of manganic salt to ketone being higher than 0.1, at a temperature from 20 to 130° C., with the selective formation of the acid R—COOH wherein R is as defined above.

3,833,626

PROCESS FOR PREPARING PERFLUORINATED MONO- AND DICARBOXYLIC ACIDS

Armin Ferse and Wolfgang Koch, Dresden, Germany, assignors to VEB Chemiewerk Nunchritz, Nunchritz, Germany

No Drawing. Continuation-in-part of abandoned application Ser. No. 761,787, Sept. 23, 1968. This application Sept. 17, 1971, Ser. No. 181,622

Int. Cl. C07c *53/16, 51/16;* B01j *1/10*

U.S. Cl. 260—408 6 Claims

Process for preparing perfluorinated carboxylic acids, more particularly perfluorinated mono- and dicarboxylic acids and derivatives thereof, which comprises in a first stage degrading PTFE (polytetrafluoroethylene) or related perfluorinated polymers or copolymers by exposure to high-energy radiation at a dosage between $8 \cdot 10^8$ and $5 \cdot 10^{10}$ r. and at a temperature between about 10 and 95° C. until perfluorinated aliphatic hydrocarbons are formed in the form of viscous oils of a chain length of C_4 to C_{20}, and thereafter in a second stage subjecting the same to oxidation with a strong oxidant, thus obtaining perfluorinated aliphatic acids of the corresponding chain length.

3,833,627

ALUMINUM POLYGLYCERYL FATTY ACID ESTERS

Martin M. Rieger, Morris Plains, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.

No Drawing. Filed Oct. 5, 1972, Ser. No. 296,362

Int. Cl. A61k *27/00;* C07f *5/06*

U.S. Cl. 260—410.6 4 Claims

Aluminum polyglyceryl fatty acid esters having prolonged acid neutralization characteristics and anti-foam activity.

3,833,628

OIL EXTRACTION PROCESS

Marshall Pike, Camberley, and Alan Watson Routledge, Whitehaven, England, assignors to Albright and Wilson Limited, Oldbury, near Birmingham, England

No Drawing. Filed Sept. 30, 1970, Ser. No. 77,011

Claims priority, application Great Britain, Oct. 2, 1969, 48,586/69

Int. Cl. C09f *5/00*

U.S. Cl. 260—412 12 Claims

Glyceride oils are extracted from vegetable or fish sources by treatment of the source with an aqueous solution containing an effective amount of a sulphonate salt selected from the group consisting of alkali metal, alkaline earth metal and ammonium salts of phenyl and alkylphenyl sulphonic acids wherein there are not more than 3 alkyl groups comprising not more than 4 carbon atoms in the aggregate, and subsequently separating from a mixture of liquid phase comprising oil and said sulphonate solution and recovering oil from said liquid phase. In preferred cases, e.g. with palm fruit, the source is such that the sulphonate salt treatment brings about the removal of a major proportion of available oil without expressing.

3,833,629

PROCESS FOR THE PRODUCTION OF LIGHT-COLORED, COLOR-STABLE FATTY ACIDS

Sasanka Sekhar Naskar and Gustav Renckhoff, Witten (Ruhr), Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

No Drawing. Filed Mar. 1, 1971, Ser. No. 119,826

Int. Cl. C08h 17/36

U.S. Cl. 260—419 **15 Claims**

Light-colored, color-stable fatty acids of 8–18 carbon atoms are produced by heating the crude fatty acids in the presence of vanadium oxide, a lower alkyl vanadate, a lower alkyl ester of zirconic acid, an aromatic carboxylic acid or lower alkyl ester thereof, or a mixture of the aromatic carboxylic acid or ester with the alkyl ester of titanic or zirconic acid at about 180°–260° C., and then distilling, the resulting mixture under a vacuum.

3,833,630

PREPARATION OF ANTIMONY GLYCOLOXIDE

Otto Ernest Loeffler, Rahway, N.J., assignor to NL Industries, Inc., New York, N.Y.

No Drawing. Filed Aug. 24, 1973, Ser. No. 391,122

Int. Cl. C07f 9/90

U.S. Cl. 260—446 **10 Claims**

A novel process for the production of antimony glycoloxide is described which comprises; heating a mixture of ethylene glycol and an antimony trisorganic carboxylate; wherein the mole ratio of ethylene glycol to antimony trisorganic carboxylate is at least 1.5; and separating an organic carboxylic acid from said mixture, said organic carboxylic acid having a boiling point below the boiling point of ethylene glycol in said mixture.

3,833,631

ALUMINUM SALTS OF ESTERS AS STABILIZING AGENTS FOR CHLORINATED VINYL POLYMERS

Gabriella Balint nee Berczi, Lajos Csonka, Gyorgy Galambos, Pal Gomory, Tibor Kelen, Ferenc Nagy, Janos Szerecz, and Ferenc Tudos, Budapest, Hungary, assignors to Intercooperation Kereskedelemfejlesztesi Rt., Budapest, Hungary

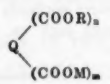
No Drawing. Filed Mar. 27, 1972, Ser. No. 238,468

Claims priority, application Hungary, Apr. 1, 1971, MA 2,217

Int. Cl. C07f 5/06

U.S. Cl. 260—448 R **3 Claims**

Compounds of the formula



wherein

Q is a member selected from the group consisting of aryl, saturated straight-chained or branched hydrocarbon of 2 to 20 carbon atoms and unsaturated straight-chained or branched hydrocarbon of 3 to 20 carbon atoms,

R is a member selected from the group consisting of aryl and saturated straight-chained or branched aliphatic hydrocarbon of 2 to 20 carbon atoms, and R may be substituted with at least one hydroxy,

M is one equivalent of aluminum,

n and *m* each represent an integer of 1 to 3, and the sum of $n+m$ is at least two and not more than four, but if Q is phenyl, *n* may not represent 1.

have been prepared by reacting the alkali metal salts of the appropriate partial esters with compounds supplying aluminum.

The compounds of the general formula I exert excellent stabilizing effect on chlorinated vinyl polymers. The stabilizers may be added to the polymers in an amount of 0.1 to 30% by weight, preferably in an amount of 1 to 20% by weight. The novel stabilizers can be used in admixture with conventional stabilizers as well.

3,833,632

ALKYL FLUOROHEXAHALOGENOISOPROPOXY-CARBOXYLATE SILICON DERIVATIVES AND POLYMERS AND COPOLYMERS THEREOF

François Meiller, Palaiseau, France, assignor to Produits Chimiques Pechiney-Saint-Gobain, Neuilly-sur-Seine, France

No Drawing. Original application June 30, 1971, Ser. No. 158,614. Divided and this application Jan. 4, 1973, Ser. No. 320,906

Claims priority, application France, July 6, 1970, 7024957

Int. Cl. C07f 7/08

U.S. Cl. 260—448.2 B **6 Claims**

This invention is addressed to derivatives of alkyl fluorohexahalogenoisopropoxycarboxylate silicon derivatives and polymers and copolymers formed thereof. The silicon derivatives of the present invention are useful as intermediates in the preparation of such polymers and copolymers which are useful as lubricants, as water repellent and oil repellent agents and as solvent resistant fluorinated elastomers.

3,833,633

PEROXY CONTAINING SILANES

William John Owen, Penarth, and Bryan Ewart Cooper, Bridgend, Glamorgan, Wales, assignors to Dow Corning Limited, London, England

No Drawing. Filed Sept. 22, 1972, Ser. No. 291,510

Claims priority, application United Kingdom, Sept. 29, 1971, 45,320/71; May 2, 1972, 20,311/72

Int. Cl. C07f 7/08, 7/18

U.S. Cl. 260—448.2 B **4 Claims**

Organosilicon compounds containing the peroxide grouping in the molecule. The compounds have the general formula

$$R_nX_{3-n}SiR'OOR''$$

in which R is alkyl or phenyl, X is alkoxy, alkoxyalkoxy or t-alkylperoxy, *n* is 0, 1 or 2, R′ is a specified divalent organic radical and R″ is t-alkyl, t-aralkyl, acyl or aroyl.

The compounds are useful as curing agents for organic resins, polymerisation initiators for organic monomers and as coupling agents for improving the bonding of unsaturated organic resins to inorganic substrates.

3,833,634

MANUFACTURE OF POLYFUNCTIONAL COMPOUNDS

Roy L. Pruett and Wellington E. Walker, Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 210,538, Dec. 21, 1971. This application Jan. 19, 1972, Ser. No. 219,130

Int. Cl. C07c 27/06

U.S. Cl. 260—449 R **21 Claims**

A process for the preparation of polyfunctional oxygen-containing compounds such as ethylene glycol and/or derivatives thereof which comprise reacting an oxide of carbon with hydrogen using a rhodium complex catalyst.

3,833,635

2,4-DIENE THIOLESTERS AND ACIDS

Clive A. Henrick, Palo Alto, Calif., assignor to Zoecon Corporation, Palo Alto, Calif.

No Drawing. Continuation-in-part of application Ser. No. 265,922, June 23, 1972, which is a continuation-in-part of abandoned application Ser. No. 201,102, Nov. 22, 1971, which is a continuation-in-part of abandoned application Ser. No. 111,673, Feb. 1, 1971, which is a continuation-in-part of abandoned application Ser. No. 111,701, Feb. 1, 1971, which is a continuation-in-part of abandoned application Ser. No. 111,767, Feb. 1, 1971, which in turn is a continuation-in-part of application Ser. No. 187,898, Oct. 8, 1971, now Patent No. 3,752,843. This application Nov. 1, 1972, Ser. No. 302,983

Int. Cl. C07c *153/07*

U.S. Cl. 260—455 R 23 Claims

Novel aliphatic hydrocarbon di-olefinic acids, esters, thiolesters, and derivatives thereof, intermediates therefor, syntheses thereof, and the control of insects.

3,833,636

POLYMERS STABILIZED WITH ACYL HYDRAZONES

Brian Holt, Royton, Donald Richard Randell, Stockport, and James Jack, Bramhall, England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Original application Mar. 13, 1972, Ser. No. 234,333, now Patent No. 3,745,163. Divided and this application Nov. 22, 1972, Ser. No. 308,910

Int. Cl. C08f *45/60*; C08g *51/60*

U.S. Cl. 260—45.8 N 8 Claims

New acyl hydrazones of 2,2,6,6-tetramethylpiperidin-4-one are used as stabilizers for organic materials.

3,833,637

PREPARATION OF UNSATURATED NITRILES

Raymond L. Cobb, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Nov. 22, 1971, Ser. No. 201,192

Int. Cl. C07c *121/30, 121/48, 121/72*

U.S. Cl. 260—465 K 6 Claims

Condensation of aldehydes with alkyl nitriles over a basic catalyst yields alpha,beta-unsaturated nitriles. In one embodiment, acetonitrile reacted with either acetaldehyde or benzaldehyde in the presence of a catalyst comprising a basic inorganic compound yielded, respectively, crotonitrile and cinnamonitrile. The product nitriles are chemical intermediates to acids, amides or amines.

3,833,638

AMMOXIDATION OF SATURATED HYDROCARBONS

Walter R. Knox, Town and Country, Keith M. Taylor, Ballwin, and Gerald M. Tullman, Overland, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation-in-part of abandoned application Ser. No. 100,366, Dec. 21, 1970. This application Nov. 14, 1972, Ser. No. 306,506

Int. Cl. C07c *121/02, 121/32*

U.S. Cl. 260—465.3 4 Claims

Method for the production of acrylonitrile or methacrylonitrile from propane or isobutane, ammonia and oxygen employing catalyst containing cerium, molybdenum and bismuth or tellurium. A halogen may also be used.

3,833,639

PROCESS FOR PREPARATION OF UNSATURATED NITRILES

Luciano Moreschini, Franco Marciandi, Guido Petrini, and Franco Faletti, Milan, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

No Drawing. Filed June 14, 1972, Ser. No. 262,562

Claims priority, application Italy, June 16, 1971, 25,902/71; July 21, 1971, 7,518/71; Sept. 15, 1971, 28,657/71, 28,658/71

Int. Cl. C07c *121/02*

U.S. Cl. 260—465.9 8 Claims

Method of preparing alpha-beta-unsaturated nitriles. Comprises reacting, in the gaseous phase, a saturated aldehyde containing from 3 to 8 carbon atoms with oxygen and ammonia in the presence of a catalyst containing (1) tellurium oxide and (2) an oxide of titanium, cerium, or molybdenum, or a mixture of oxides of cerium and molybdenum.

3,833,640

PROSTAGLANDIN E_1, F_1, AND A_1 ANALOGS

John E. Pike, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich

No Drawing. Continuation-in-part of abandoned application Ser. No. 748,158, July 29, 1968. This application Aug. 4, 1971, Ser. No. 169,071

Int. Cl. C07c *61/32, 61/36, 69/74*

U.S. Cl. 260—468 D 28 Claims

This invention is a group of prostaglandin E_1, F_1, and A_1 analogs which differ from the natural compounds in having one or more alkyl or fluoro substituents near the end of the terminal alkyl portion. These compounds are useful for the same pharmacological purposes as the natural compounds.

3,833,641

HALO-ARYL AMIDE-ESTER POLYOLS

Anthony Joseph Papa, Saint Albans, W. Va., and William Robert Proops, Claymont, Del., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Aug. 16, 1971, Ser. No. 172,296

Int. Cl. C07c *101/42*

U.S. Cl. 260—471 R 16 Claims

Novel aromatic compounds are provided in which the aromatic nucleus has bonded thereto (1) at least one bromine or chlorine atom, (2) an amido group wherein nitrogen is bonded to at least one hydroxyalkyl group or an organic moiety bearing a hydroxyalkyl group, and (3) a hydroxyl-terminated oxyalkylated carboxylic acid ester group. The halogen-substituted aromatic amide-ester polyols of the invention are useful in imparting flame-retardancy to organic polymers normally susceptible to burning including polyurethanes such as, in particular, flexible polyurethane foams.

3,833,642

ALKENYLOXY BENZOIC ACID AND ESTERS THEREOF

Madhukar Subraya Chodnekar, Basel, Albert Pfiffner and Norbert Rigassi, Arlesheim, Ulrich Schwieter, Reinach, Basel-Land, and Milos Suchy, Basel, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed Apr. 23, 1970, Ser. No. 31,422

Claims priority, application Switzerland, May 30, 1969, 6,597/69

The portion of the term of the patent subsequent to Oct. 30, 1990, has been disclaimed

Int. Cl. C07c *69/78*

U.S. Cl. 260—473 R 20 Claims

Phenyl ethers, thioethers or sulfoxides of alkyl or alkenyl derivatives having a chain length of at least 6 car-

bon atoms and wherein the ring of the benzyl or phenyl moiety is substituted with carboxyl or esters thereof which are useful in killing and preventing proliferation of insects by upsetting their hormone balance.

3,833,643

PROCESS FOR THE PRODUCTION OF PURE ARYL ESTERS OF DICARBOXYLIC ACIDS

Hans Leo Hulsmann, Wetter (Ruhr), and Gustav Renckhoff, Witten (Ruhr), Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

No Drawing. Filed Feb. 28, 1972, Ser. No. 230,116

Claims priority, application Germany, Feb. 26, 1971, P 21 09 102.1

Int. Cl. C07c *69/80, 69/82*

U.S. Cl. 260—475 PN 14 Claims

A process for the production of aryl esters of polycarboxylic acids such as isophathalic and terephthalic acid is disclosed which is an improvement in the process disclosed in U.S. Patent 3,471,549. The improvement of the subject process involves the addition of a carbonic acid diaryl ester in place of the lower fatty acid anhydride used in the process of the patent. The carbonic acid diaryl ester is added in an amount which is at least equivalent to the alkyl ester groups still present in the reaction mixture which contains the desired aryl ester of the polycarboxylic acid.

3,833,644

B,D-SECO-Δ^4 AND $\Delta^{5(10)}$-STEROIDAL COMPOUNDS

Pierre Crabbe, Mexico City, Mexico, and John H. Fried, Palo Alto, Calif., assignors to Syntex Corporation, Panama, Panama

No Drawing. Filed July 20, 1971, Ser. No. 164,459

Int. Cl. C07c *171/07*

U.S. Cl. 260—488 R 19 Claims

New 5,6;16,17-diseco- and 5,6;15,17-diseco - 16 - nor steroidal compounds of the estrane series, unsaturated at C–4,5 or C–5(10) useful as antiandrogenic agents, and methods for their preparation.

3,833,645

PREPARATION OF 2-CHLOROETHANE-PHOSPHONIC ACID

Hans Theobald, Limburgerhof, and Karl Kiehs, Lampertheim, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Apr. 16, 1973, Ser. No. 351,155

Int. Cl. C07f *9/38*

U.S. Cl. 260—502.4 R 7 Claims

New process for the preparation of 2-chloroethanephosphonic acid by splitting the corresponding bis-2-chloroethyl ester.

3,833,646

AMMONIUM AROMATIC CARBOXYLATE CONVERSION TO THE CORRESPONDING ACIDS

Richard V. Norton, Wilmington, Del., assignor to Sun Research and Development Co., St. Davids, Pa.

No Drawing. Filed Apr. 16, 1973, Ser. No. 351,219

Int. Cl. C07c *63/14, 63/26, 63/40*

U.S. Cl. 260—515 P 8 Claims

A process for converting an ammonium salt of an aromatic mono- or dicarboxylic acid to the free acid in high yield by adding acetic acid to a 0.25 to 15 molar aqueous solution of said salt in an amount so that the mole ratio of acetic acid to ammonium ion is greater than about 3:1, and thereafter recovering the free acid.

3,833,647

PRODUCTION OF AROMATIC POLY-CARBOXYLIC ACIDS

Abraham Perry Gelbein, Plainfield, Benjamin Joseph Luberoff, Upper Montclair, Morgan Chuan-Yuan Sze, Summit, and Richard T. Whitehead, Westfield, N.J., assignors to The Lummus Company, Bloomfield, N.J.

Filed Sept. 7, 1971, Ser. No. 178,382

The portion of the term of the patent subsequent to Dec. 4, 1990, has been disclaimed

Int. Cl. C07c *63/00, 63/26*

U.S. Cl. 260—515 P 38 Claims

Aromatic polycarboxylic acids and their anhydrides are produced from the corresponding nitriles by aqueous catalytic hydrolysis with countercurrent stripping to produce an acid ammonium salt of the aromatic acid, followed by thermal decomposition of the salt to form the acid, and purification if necessary.

3,833,648

PROCESS FOR PREPARING ACYLPHENOXY-ALIPHATIC ACID DERIVATIVES

Hiroaki Moriyama and Hisao Yamamoto, Nishinomiya, Shigeho Inaba, Takarazuka, and Hideo Nagata and Toshio Tamaki, Ibaraki, Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

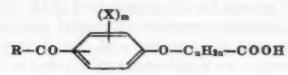
No Drawing. Filed Oct. 28, 1970, Ser. No. 84,875

Claims priority, application Japan, Oct. 30, 1969, 44/87,459

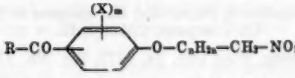
Int. Cl. C07c *65/14*

U.S. Cl. 260—520 3 Claims

A process for producing acylphenoxy aliphatic carboxylic acid derivatives represented by the general formula,



wherein R is a lower alkyl, alkenyl or alkynyl group, X is the same or different hydrogen atom, halogen atom, lower alkyl group, trifluoromethyl group or lower alkoxy group, and when substituted on adjacent carbon atoms of the benzene ring, two X's radicals may be joined together to form a hydrocarbylene chain containing four carbon atoms between its points of attachment, for example, tetramethylene, 1,3-butadienylene, etc., *m* is an integer of 1 to 4 and *n* is an integer of 1 to 4, characterized by reacting an ω-nitroacylphenoxyalkyl hydrocarbon derivative represented by the general formula,



wherein R, X, *m* and *n* are as defined above, with a strong acid.

3,833,649

PROCESS FOR PRODUCING UNSATURATED CARBOXYLIC ACIDS

Masahiro Wada, Nishinomiya, Isao Yanagisawa, Ikeda, Michikazu Ninomiya, Kobe, and Takashi Ohara, Nishinomiya, Japan, assignors to Nippon Shokubai Kagaku Kogyo Co., Ltd., Osaka, Japan

No Drawing. Filed Oct. 19, 1971, Ser. No. 190,661

Int. Cl. C07c *51/26, 57/04*

U.S. Cl. 260—530 N 8 Claims

A process for producing unsaturated carboxylic acids, which comprises oxidizing unsaturated aldehydes in the

vapor phase in the presence of a catalyst comprising a catalytic oxide supported on an inert carrier, such catalytic oxide containing metal elements in the atomic ratio Mo:V:Cu:Cr:W of 12:2–14:1–6:0–4:0–12 with the proviso that Cr+W is not O.

3,833,650

PREPARATION OF NITRILOTRIACETIC ACID

Heinz Schulze and Edward Thomas Marquis, Austin, Tex., assignors to Jefferson Chemical Company, Inc., Houston, Tex.

No Drawing. Filed Aug. 19, 1971, Ser. No. 173,315

Int. Cl. C07c *99/00, 101/20*

U.S. Cl. 260—531 C **4 Claims**

An improved process is provided for preparing nitrilotriacetic acid (NTA) and its salts from triethanolamine (TEA) in the presence of alkali metal hydroxides and cadmium salts that is characterized by employment of high temperatures and very short reaction times.

3,833,651

PROCESS FOR THE PREPARATION OF DL-METHIONINE

Shunji Ouchi and Chisei Shibuya, Tokyo, Japan, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt, Germany

No Drawing. Filed Aug. 5, 1971, Ser. No. 169,495

Claims priority, application Japan, Aug. 12, 1970, 45/70,105

Int. Cl. C07c *149/20*

U.S. Cl. 260—534 S **5 Claims**

Improved process for the preparation of DL-methionine wherein the addition reaction of methyl mercaptan and hydrocyanic acid to acrolein and the hydantoin ring forming reaction are simultaneously effected in one-stage to give a hydantoin type intermediate, which is then hydrolyzed. The process can be simply and easily conducted to obtain high purity DL-methionine in high yield at low cost.

3,833,652

PREPARATION OF TETRACHLOROTEREPHTHALOYL CHLORIDE FROM CHLORINATION OF TEREPHTHALOYL CHLORIDE OR TEREPHTHALIC ACID IN A SOLUTION OF CHLOROSULFONIC ACID

James O. Knobloch, Naperville, Ill., assignor to Standard Oil Company, Chicago, Ill.

No Drawing. Filed Dec. 29, 1972, Ser. No. 319,502

Int. Cl. C07c *63/30*

U.S. Cl. 260—544 M **6 Claims**

Tetrachloroterephthaloyl chloride is prepared from terephthaloyl chloride or terephthalic acid in a single step by chlorinating terephthaloyl chloride or terephthalic acid in solution in chlorosulfonic acid containing sulfur trioxide and employing an iodine catalyst. The reaction is carried out under mild conditions. The product, tetrachloroterephthaloyl chloride is recoverable by extraction with an inert solvent or by low temperature crystallization. Adhering chlorosulfonic acid is flashed from the recovered solid tetrachloroterephthaloyl chloride which is then sublimed or recrystallized. Chlorosulfonic acid is formed as a by-product of the chlorination reaction.

3,833,653

2-AMINO-ADAMANTANE METHYLAMINE

Jiban Kumar Chakrabarti, Frimley, and Stephen Slomo Szinai, Wokingham, England, assignors to Eli Lilly and Company, Indianapolis, Ind.

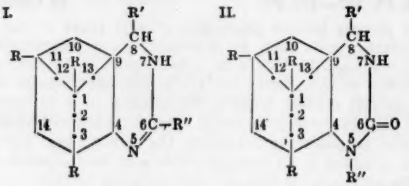
No Drawing. Application Apr. 5, 1971, Ser. No. 131,439, now Patent No. 3,746,761, which is a division of application Ser. No. 821,063, May 1, 1969, now Patent No. 3,644,356. Divided and this application Mar. 7, 1973, Ser. No. 338,772

Claims priority, application Great Britain, May 21, 1968, 24,224/68

Int. Cl. C07c *87/40*

U.S. Cl. 260—563 P **2 Claims**

Adamantanopyrimidine compounds of the formulae:



useful as analgesics and as local anaesthetics; and intermediates useful in the synthesis of the foregoing adamantanopyrimidine compounds.

3,833,654

SWEETENERS BASED ON SYN OXIMES OF 4-(METHOXYSUBSTITUTED) - 1 - CYCLOHEXENE-1-CARBOXALDEHYDES

Edward M. Acton, Menlo Park, Kazuko Yamamoto, Fremont, and Herbert Stone, Menlo Park, Calif., assignors to Stanford Research Institute, Menlo Park, Calif.

No Drawing. Filed May 16, 1973, Ser. No. 360,844

Int. Cl. C07c *131/10*

U.S. Cl. 260—566 A **1 Claim**

The 4-methoxymethyl-, 4-methoxy-, and 4-(1-methoxyethyl)-analogs (I, II, and III, respectively) of 1-cyclohexene-1-carboxaldehyde *syn*-oxime retain good levels of sweetness and taste intensity in water solution, and are free of "phenolic" or "medicinal" off-tastes.

3,833,655

AMINO-DIBENZO[a,d]CYCLOHEPTA[1,4] DIEN-5-ONE COMPOUNDS

Albrecht Edenhofer, Riehen, and Hans Spiegelberg, Basel, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Application Feb. 11, 1971, Ser. No. 114,718, now Patent No. 3,705,168, which is a division of application Ser. No. 838,317, July 1, 1969, now Patent No. 3,586,718, which in turn is a division of application Ser. No. 517,893, Jan. 3, 1966, now Patent No. 3,478,048. Divided and this application Aug. 25, 1972, Ser. No. 284,518

Claims priority, application Switzerland, Jan. 8, 1965, 232/65; Jan. 14, 1965, 525/65; Dec. 17, 1965, 525/65

Int. Cl. C07c *87/28*

U.S. Cl. 260—570.9 **9 Claims**

2,3;3a,12b - Tetrahydro-8H-dibenzo[3,4;6,7]cyclohept[1,2-d]oxazoles and dibenzo[a,d]cyclohept[1,4]dienes

bearing, for example, substituents at the 10- and 11-positions, are prepared, inter alia, from the corresponding dibenzocycloheptatrienones. The products are useful as antidepressants.

3,833,656

INTERMEDIATES FOR PRODUCING PROSTAGLANDINS

George E. Just, 499 Mount Pleasant Ave., Westmount, Quebec, Canada, and Chaim Simonovitch, Rishon le Zion, Israel; said Simonovitch assignor to said Just

No Drawing. Continuation-in-part of abandoned application Ser. No. 657,085, July 31, 1967. This application Dec. 31, 1970, Ser. No. 103,342

Int. Cl. C07c *49/54*

U.S. Cl. 260—586 R **5 Claims**

Prostaglandin $F_{1\alpha}$, prostaglandin $F_{1\beta}$ and analogs of those are produced from bicyclo[3.1.0]hexane intermediates.

3,833,657

SYNTHESIS OF 2-METHOXYTROPONES

David H. Evans, Cambridge, and Richard B. Greenwald, Framingham, Mass., assignors to Polaroid Corporation, Cambridge, Mass.

No Drawing. Filed May 30, 1972, Ser. No. 258,056

Int. Cl. C07c *45/00*

U.S. Cl. 260—586 M **1 Claim**

This invention relates to an improved method of synthesizing 2-methoxytropones in high yields by reacting a 2-hydroxytropone with dimethyl sulfate in the presence of potassium carbonate.

ERRATUM

For Class 260—590 see:
Patent No. 3,833,726

3,833,658

2-HYDROXY-4-PHENOXYBENZOPHENONE COMPOUNDS

Lajos Avar, Binningen, Basel-Land, and Kurt Hofer, Munchenstein, Basel-Land, Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

No Drawing. Filed Aug. 17, 1971, Ser. No. 172,588

Claims priority, application Switzerland, Aug. 28, 1970, 12,886/70

Int. Cl. C07c *49/80, 49/82*

U.S. Cl. 260—591 **12 Claims**

The purpose of this invention is to render accessible 2 - Hydrox - 4' - phenoxybenzophenone, unsubstituted or substituted by alkyl or alkoxy radicals or by halogen, which compounds absorb ultraviolet rays and protect light-sensitive organic materials, notably plastics, from the detrimental action of this radiation.

3,833,659

PREPARATION OF OXYGEN-CONTAINING COMPOUNDS

Louis Schmerling, Riverside, and Herman S. Bloch, Des Plaines, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Continuation-in-part of abandoned application Ser. No. 883,322, Dec. 8, 1969. This application Apr. 5, 1973, Ser. No. 348,380

Int. Cl. C07c *45/02*

U.S. Cl. 260—597 **12 Claims**

Oxygen-containing compounds as exemplified by ketones and aldehydes are prepared by converting diolefinic compounds to the desired products by reacting said olefins with water in the presence of an acidic catalyst and a water-soluble polyether solvent at an elevated temperature in the range of from 100° to 250° C.

3,833,660

PROCESS FOR MAKING AROMATIC ALDEHYDES

William E. Smith, Schenectady, N.Y., assignor to General Electric Company

No Drawing. Filed Apr. 26, 1972, Ser. No. 247,867

Int. Cl. C07c *47/50, 47/56*

U.S. Cl. 260—599 **5 Claims**

Aromatic aldehydes can be prepared by effecting reaction between an aromatic compound containing a nuclearly bonded hydrogen and hexamethylenetetramine in the presence of trifluoroacetic acid. Upon hydrolysis of the reaction product, the desired aryl aldehydes are obtained.

3,833,661

NOVEL PROCESS FOR THE PREPARATION OF TRIS(HYDROXYMETHYL)PHOSPHINE AND TRIS(HYDROXYMETHYL)PHOSPHINE OXIDE

Samuel E. Ellzey, Jr., and William J. Connick, Jr., New Orleans, La., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Filed July 18, 1972, Ser. No. 272,812

Int. Cl. C07f *9/02*

U.S. Cl. 260—606.5 P **3 Claims**

Tris(hydroxymethyl)phosphine was prepared from tetrakis(hydroxymethyl)phosphonium salts by interaction with one equivalent of a strongly basic anion exchange resin in the hydroxide form. The corresponding phosphine oxide resulted from interaction of the phosphonium salts with an excess of the basic ion exchange resin.

3,833,662

PROCESS FOR THE MANUFACTURE OF DIALKYLPHOSPHINE OXIDES

Horst Staendeke, Bruhl, and Werner Klose, Hurth-Knapsack, Germany, assignors to Knapsack Aktiengesellschaft, Knapsack, near Cologne, Germany

No Drawing. Filed Nov. 9, 1972, Ser. No. 305,135

Claims priority, application Germany, Nov. 12, 1971, P 21 56 203.8

Int. Cl. C07f *9/28*

U.S. Cl. 260—606.5 P **13 Claims**

Production of dialkylphosphine oxides of the general formula:

in which R and R' stand for identical or different, straight chain or branched alkyl groups containing between 1 and 3 carbon atoms. The oxides are made by oxidizing a hydrohalic acid solution of a dialkylphosphine with an oxidant having an oxidizing power greater than that of atmospheric oxygen. The oxidant is more particularly added substantially in the stoichiometric proportions necessary to effect the oxidation to dialkylphosphine oxide.

3,833,663

OXIDATION OF HYDROCARBONS

James McAvoy, Norton-on-Tees, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Dec. 16, 1968, Ser. No. 784,198

Claims priority, application Great Britain, Jan. 5, 1968, 860/68

Int. Cl. C07c *73/08*

U.S. Cl. 260—610 B **4 Claims**

Hydrocarbon hydroperoxides are produced by oxidising a hydrocarbon having at least one secondary or ter-

tiary carbon atom, for example cumene, in the liquid phase with a gas containing free oxygen in the presence of a fluoride of an alkali or alkaline earth metal, particularly sodium fluoride.

3,833,664
METHOD FOR PRODUCING ORGANIC PEROXIDES

Kazuyoshi Aoshima and Takeshi Komai, Taketoyo-machi, Japan, assignors to Nippon Oils and Fats Company Limited, Tokyo, Japan

No Drawing. Filed Dec. 14, 1970, Ser. No. 98,067
Claims priority, application Japan, Dec. 17, 1969, 44/100,916
Int. Cl. C07c *73/00*
U.S. Cl. 260—610 R **3 Claims**

An organic peroxide is prepared by reacting a tert.-hydroperoxide with a tert.-alcohol by using an acid catalyst in the presence of magnesium sulfate having a dehydrating ability. Said magnesium sulfate can effectively remove water formed during the condensation reaction of the tert.-hydroperoxide with the tert.-alcohol.

3,833,665
CYCLOALIPHATIC POLYOLS

Anthony Joseph Papa, St. Albans, W. Va., and William Robert Proops, Claymont, Del., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Aug. 16, 1971, Ser. No. 172,262
Int. Cl. C07c *43/18*
U.S. Cl. 260—611 R **13 Claims**

Oxyalkylated derivatives of a 3 - cyclohexane-1,1-dimethanol and a 3,4-dibromocyclohexane-1,1-dimethanol are provided which are useful polyols in the manufacture of polymeric compositions including polyurethanes. Also provided are polymeric compositions to which flame-retardant properties have been imparted by the incorporation therein of a 3,4-dibromocyclohexane-1,1-dimethanol, an oxyalkylated 3,4-dibromocyclohexane-1,1-dimethanol, or a combination thereof. The dibromo-cycloaliphatic diols of the invention are especially useful in the formation of flame-retarded polyurethanes including cellular polyurethanes and, in particular, flexible foams.

3,833,666
PROCESS FOR BROMOMETHYLATING AROMATIC HYDROCARBONS

Herbert Jenkner, Cologne, Germany, assignor to Chemische Fabrik Kalk GmbH

No Drawing. Filed May 7, 1971, Ser. No. 141,410
Claims priority, application Germany, June 3, 1970, P 20 27 162.9
Int. Cl. C07c *41/00, 43/20*
U.S. Cl. 260—612 R **9 Claims**

Bromomethylation of an aromatic hydrocarbon by the reaction of an aromatic hydrocarbon with formaldehyde or paraformaldehyde and an aliphatic carbonic acid with a solution of hydrogen bromide in an aliphatic carbonic acid.

3,833,667
PROCESS FOR THE PREPARATION OF 1,2-DI-(o- OR p-NITROPHENYL)-ETHANOL

Jan Magnus Bakke, Trondheim, Norway, assignor to Aktiebolaget Bofors, Bofors, Sweden

No Drawing. Filed Jan. 10, 1972, Ser. No. 216,759
Claims priority, application Sweden, Feb. 1, 1971, 1,220/71
Int. Cl. C07c *31/14*
U.S. Cl. 260—618 C **10 Claims**

1,2-di-(o- or p-nitrophenyl)-ethanol may be prepared by oxidation of o-nitrotoluene and p-nitrotoluene, respectively, in high concentrations with oxygen in an aprotic, polar, cation-solvating solvent with basic conditions.

3,833,668
DIMETHYL ACETAL OF 1-(2,4-DI-SEC-BUTYLPHENOXY)-2-PROPANONE

Chester E. Pawloski, Bay City, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Mar. 5, 1973, Ser. No. 337,864
Int. Cl. C07c *43/20*
U.S. Cl. 260—613 D **1 Claim**

The invention relates to the dimethyl acetal of 1-(2,4-di-sec-butylphenoxy)-2-propanone having useful pharmacological properties as determined by the reduction of cholesterol in the blood of mammals.

3,833,669
MANUFACTURE OF POLYALKYLENE ETHERS

Robert Gehm, Limburgerhof, and John J. Hutchison, Ilvesheim, Germany, assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

No Drawing. Filed Dec. 7, 1972, Ser. No. 313,105
Claims priority, application Germany, Feb. 24, 1972, P 22 08 614.2
Int. Cl. C07c *41/12, 41/02*
U.S. Cl. 260—615 B **5 Claims**

Basic catalysts for the polymerization of alkylene oxides are removed from the resulting polyalkylene ether by precipitating the catalysts with carbon dioxide in the presence of basic magnesium salts. The resulting polyalkylene ethers are especially suited for use in polyurethane foams.

3,833,670
2-[3,5-DI(TRIFLUOROMETHYL)PHENYL] HEXAFLUORO-2-PROPANOL

Scott A. Reines, Fort Lee, N.J., assignor to the United States of America as represented by the Secretary of the Navy

No Drawing. Original application Feb. 4, 1971, Ser. No. 112,826, now Patent No. 3,707,483, dated Dec. 26, 1972. Divided and this application Oct. 17, 1972, Ser. No. 298,192
Int. Cl. C07c *33/00, 35/00*
U.S. Cl. 260—618 D **1 Claim**

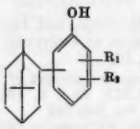
Fluorine-substituted benzyl monoglycidyl ethers and their precursors have been prepared containing a hexafluoroisopropyl group. These compounds are useful as coupling agents for bonding fluorinated monomers to chemically active surfaces, as fluorinated surface active agents, or as viscosity reducers for fluorinated epoxy resins.

3,833,671
PROCESS FOR THE PREPARATION OF ISOBORNYLPHENOL

Jean Mardiguian and Pierre Fournier, Paris, France, assignors to Societe a Responsabilitee Limitee dite: Marpha Societe d'Etudes et d'Exploitation de Marques, Paris, France

No Drawing. Filed July 1, 1970, Ser. No. 51,664
Claims priority, application Great Britain, July 4, 1969, 33,959/69
Int. Cl. C07c *37/00*
U.S. Cl. 260—619 D **14 Claims**

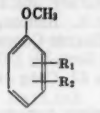
A process for the preparation of isobornylphenols of the formula:



I

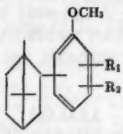
in which R_1 and R_2 may be identical or different and each represent a hydrogen or halogen atom or a straight or branched chain lower alkyl group, containing not more than 4 carbon atoms, provided that R_1 and R_2 are not

simultaneously hydrogen atoms, which process comprises (a) condensing camphene with a methyl ether of a phenol of the formula:



II

to yield a methyl ether of an isobornylphenol of formula:



III

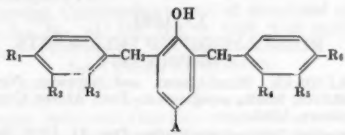
and (b) demethylating the intermediate compound of formula III to give the isobornylphenol of formula I.

3,833,672
HALOGENATED DIBENZYLPHENOLS AND THEIR PREPARATION

Jacques Debat, Paris, France, assignor to Institut de Recherches Chimiques et Biologiques Appliquees, I.R.C.E.B.A., Paris, France

No Drawing. Filed June 30, 1972, Ser. No. 268,204
Claims priority, application France, July 6, 1971, 7124696
Int. Cl. C07c *39/16*
U.S. Cl. 260—619 A **9 Claims**

The invention provides novel halogenated dibenzylphenols of the formula:



A

in which A is a halogen atom and each of R_1, R_2, R_3, R_4, R_5 and R_6 is a hydrogen or halogen atom provided that (a) A is not a fluorine atom when

$$R_1=R_2=R_3=R_4=R_5=R_6=H,$$

and (b) A is not a chlorine atom when

(1) simultaneously $R_3=R_4=H$ and $R_1=R_2=R_5=R_6=Cl$,
(2) simultaneously $R_2=R_3=R_4=R_5=H$ and $R_1=R_6=Cl$, and
(3) simultaneously $R_1=R_2=R_5=R_6=H$ and $R_3=R_4=Cl$.

These compounds have bacteriostatic and fungistatic properties.

3,833,673
SYNTHESIS OF ALKYLATED PHENOLS FROM CARBONYL COMPOUNDS

Kent C. Brannock, Kingsport, and Charles W. Hargis, Johnson City, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Nov. 9, 1971, Ser. No. 197,124
Int. Cl. C07c *39/06*
U.S. Cl. 260—621 R **8 Claims**

Alkylated phenols such as mono-, di-, tri- or tetramethylphenols are synthesized from carbonyl compounds, with or without an alcohol, by passing the reactants over a lithium phosphate or magnesium oxide catalyst at a temperature of between about 450° and 600° C. The carbonyl compounds include, for example, acetone, isophorone and isobutyraldehyde, while the alcohol may be methanol. The alkylated phenols are useful as intermediates in the production of vitamin E, germicidal materials and resin or polymer products.

3,833,674
RECOVERY OF BROMINATED BIPHENYL

David R. Brackenridge, Royal Oak, Mich., assignor to Ethyl Corporation, Richmond, Va.

No Drawing. Filed Aug. 24, 1972, Ser. No. 283,324
Int. Cl. C07c *25/04, 25/18*
U.S. Cl. 260—649 DP **4 Claims**

A process for preparing polybrominated aromatic compounds which comprises (a) reacting an aromatic compound with bromine in the presence of a metal halide halogenation catalyst and solvent quantities of methylene bromide, and (b) adding a lower alkanol to the thereby produced reaction mixture to precipitate polybrominated aromatic product.

3,833,675
BROMINATION OF UNSATURATED HYDROCARBONS IN MIXED SOLVENTS

Jack Newcombe, Freehold, and Anderson O. Dotson, Jr., Somerset, N.J., assignors to Cities Service Company, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 99,515, Dec. 18, 1970. This application July 28, 1972, Ser. No. 275,981
Int. Cl. C07c *17/02*
U.S. Cl. 260—648 R **8 Claims**

In the bromination of an unsaturated hydrocarbon, such as the bromination of 1,5-cyclooctadiene to form tetrabromocyclooctane, improved product purities and yields are obtained when the reaction takes place in a mixture of solvents, such as heptane and t-butyl alcohol.

3,833,676
FLUORINATION OF 1,1,1-TRICHLOROETHANE WITH HYDROGEN FLUORIDE

Rokuo Ukaji, Ibaragi, and Ichiro Morioka, Matsubara, Japan, assignors to Daikin Kogyo Co., Ltd.

Filed July 28, 1971, Ser. No. 166,729
Claims priority, application Japan, July 28, 1970, 45/66,339
Int. Cl. C07c *17/20, 19/08*
U.S. Cl. 260—653.7 **9 Claims**

In the fluorination of 1,1,1-trichloroethane with hydrogen fluoride, a process wherein one molar amount of 1,1,1-trichloroethane is treated with a not less than 4 molar amount of hydrogen fluoride in a liquid phase in the absence of any catalyst at a temperature from 70 to 140° C. to give 1,1,1-dichlorofluoroethane and 1,1,1-chlorodifluoroethane selectively. The advantages of such process are (1) the use of no catalyst, wherein the various problems encountered in the use of a catalyst are overcome, (2) the elimination of the formation of tar substances as by-products and (3) the smooth proceeding of the reaction without agitation.

3,833,677
PROCESS FOR THE PREPARATION OF SUBSTITUTED AROMATIC COMPOUNDS

Charles Grard, Lyon, France, assignor to Rhone-Poulenc S.A., Paris, France

No Drawing. Filed Feb. 25, 1970, Ser. No. 14,222
Claims priority, application France, Feb. 27, 1969, 6905185
Int. Cl. C07c *15/00*
U.S. Cl. 260—668 R **11 Claims**

Friedel-Crafts-type condensation may be effected by utilising, as catalyst, a derivative of ruthenium, rhodium, osmium, or iridium, particularly a halide or halonitrile complex, which catalyst may be used in conjunction with a Brönsted acid catalyst.

3,833,678

STABLE AND PUMPABLE LIQUID ALUMINUM CHLORIDE AND BROMIDE COMPLEXES

James A. Brennan, Cherry Hill, N.J., assignor to Mobil Oil Corporation

Continuation-in-part of application Ser. No. 41,709, May 27, 1970, now Patent No. 3,725,498, which is a continuation of application Ser. No. 745,415, July 17, 1968, which is a continuation-in-part of application Ser. No. 598,564, Oct. 17, 1966, which in turn is a continuation-in-part of application Ser. No. 334,394, Dec. 30, 1963, all now abandoned. This application Sept. 8, 1972, Ser. No. 287,303

Int. Cl. C07c *3/18*

U.S. Cl. 260—683.15 B 12 Claims

Solutions of aluminum chloride or aluminum bromide, in molar excess, in methyl esters of certain normal and branched-chain alkanoic acids remain stable and pumpable at least 20 days or more. These solutions are useful catalysts for reactions, such as olefin polymerization or ethylation of isobutane, and can be recovered and recycled.

3,833,679

PARAFFIN ISOMERIZATION UTILIZING HF TO CHANGE THE SELECTIVITY OF $HSbF_6$ CATALYST

Lloyd E. Gardner and John E. Mahan, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Filed July 20, 1972, Ser. No. 273,636

Int. Cl. C07c *5/28*

U.S. Cl. 260—683.68 3 Claims

Isomerization of paraffins employing $HSbF_6$ catalyst and anhydrous hydrogen fluoride vapor results in increased selectivity.

3,833,680

PAINTING COMPOSITION

Michiaki Torii, Tokyo, Japan, assignor to Nippon Petrochemicals Company, Limited, Tokyo, Japan

No Drawing. Filed Mar. 26, 1973, Ser. No. 344,772

Claims priority, application Japan, Mar. 27, 1972, 47/29,705

Int. Cl. C08c *11/22, 13/04*

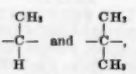
U.S. Cl. 260—735 6 Claims

A painting composition containing a chlorine-containing polymer selected from the group consisting of chlorinated rubber and chlorine-containing synthetic resin, and at least one of compounds represented by the formula (I):

(I)

$$Ar_1—R—Ar_2—R—Ar_3$$

wherein R is alkylene selected from the group consisting of



and any one of Ar_1, Ar_2, and Ar_3 is alkylphenyl (Ar_1 or Ar_3) or alkylphenylene (Ar_2), said alkyl having 1–3 carbon atoms, the number of alkyl radicals being 1–3, and the number of carbon atoms contained in all of the alkyls being 1–3, alternatively any two of Ar_1, Ar_2, and Ar_3 are phenyl or tolyl (Ar_1 and/or Ar_3), or phenylene or methylphenylene (Ar_2).

3,833,681

POLYIMIDOSILOXANE ESTER CARBONATE COPOLYMERS

Fred F. Holub, Schenectady, and Denis R. Pauze, Scotia, N.Y., and Charles A. Bialous, Evansville, Ind., assignors to General Electric Company

No Drawing. Filed June 29, 1972, Ser. No. 267,360

Int. Cl. C08g *31/06*

U.S. Cl. 260—824 R 7 Claims

Polyimidosiloxane ester carbonate copolymers are prepared by reacting a carbonyl halide or other carbonate precursor with a mixture of a bis(carboxyphthalimide), organopolysiloxane having hydroxy or carboxy functional terminal groups and a dihydroxy aromatic compound. The novel copolymers are particularly useful as electrical insulation, molding compounds, and tough flexible coatings and films.

3,833,682

RUBBER-MODIFIED THERMOSETS AND PROCESS

Ray A. Dickie, Birmingham, and Seymour Newman, Southfield, Mich., assignors to Ford Motor Company, Dearborn, Mich.

No Drawing. Original application Dec. 21, 1970, Ser. No. 100,465, now abandoned. Divided and this application May 29, 1973, Ser. No. 364,390

Int. Cl. C08g *45/04*

U.S. Cl. 260—836 8 Claims

Improvements in impact strength and fatigue properties in thermoset materials are made by incorporating therein particulate graded-rubber having surface functionality for reaction with constituents of the thermosets. A variety of novel thermoset materials are produced under variations of this process. The graded-rubber particles are characterized by having a rubbery core and a glass-like polymeric outer shell.

3,833,683

RUBBER-MODIFIED THERMOSETS AND PROCESS I

Ray A. Dickie, Birmingham, and Seymour Newman, Southfield, Mich., assignors to Ford Motor Company, Dearborn, Mich.

No Drawing. Original application Dec. 21, 1970, Ser. No. 100,465, now abandoned. Divided and this application May 29, 1973, Ser. No. 364,392

Int. Cl. C08g *45/04*

U.S. Cl. 260—836 20 Claims

Improvements in impact strength and fatigue properties in thermoset materials are made by incorporating therein particulate graded-rubber having surface functionality for reaction with constituents of the thermosets. A variety of novel thermoset materials are produced under variations of this process. The graded-rubber particles are characterized by having a rubbery core and a glass-like polymeric outer shell.

3,833,684

STABLE, HOMOGENEOUS SOLUTIONS OF POLYALKYL GLUTAMATES CONTAINING DISSOLVED ELASTOMERS

Akira Akamatsu, Kazushi Togo, and Makoto Iwatsuki, Kanagawa, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

No Drawing. Continuation-in-part of abandoned application Ser. No. 99,693, Dec. 18, 1970. This application Oct. 16, 1972, Ser. No. 297,982

Claims priority, application Japan, Dec. 10, 1969, 44/1,751

Int. Cl. C08g *41/044*

U.S. Cl. 260—857 UN 7 Claims

A stable, clear homogeneous solution of a polyalkyl glutamate and of an elastomer is produced by polymeriz-

ing an optically active γ-lower-alkyl glutamate N-carboxy anhydride in a solution of the elastomer, if the elastomer is inert to the anhydride and to the polyalkyl glutamate produced under the polymerization conditions, and the polyalkyl glutamate is soluble in the solution. Shaped objects and coatings combining the desired properties of both polymers may be prepared from the solutions.

3,833,685

FLAME RETARDANT THERMOPLASTIC COMPOSITIONS

Allen D. Wambach, Pittsfield, Mass., assignor to General Electric Company

No Drawing. Filed Mar. 10, 1972, Ser. No. 233,754
Int. Cl. C08g *39/10*; C09k *3/28*
U.S. Cl. 260—860 21 Claims

Normally flammable polyester resins (a) are rendered flame-retardant without loss in toughness by combination with (b) a flame retardant amount of (i) an aromatic carbonate copolymer, from 25 to 75 wt. percent of the repeating units comprising chloro- or bromo-substituted dihydric phenol units; (ii) an aromatic carbonate homopolymer having repeating units comprising chloro- or bromo-substituted dihydric phenol units in combination with an aromatic carbonate homopolymer having repeating dihydric phenol units; or (iii) a combination of (i) with an aromatic carbonate homopolymer having repeating dihydric phenol units, and (c) an antimony-containing compound.

3,833,686

SEQUENTIALLY PRODUCED ALKYL ACRYLATE POLYMERS BLENDED WITH POLY(VINYL HALIDES)

Raymond John Grochowski, Feasterville, Pa., Roger Kenneth Graham, Cherry Hill, N.J., and Jong Jai Whang, Seoul, Korea, assignors to Rohm and Haas Company, Philadelphia, Pa.

No Drawing. Continuation-in-part of abandoned application Ser. No. 865,198, Oct. 9, 1969. This application Sept. 10, 1971, Ser. No. 179,561
Int. Cl. C08f *15/00, 19/00*
U.S. Cl. 260—876 R 12 Claims

Processing aids of improved dispersibility in low molecular weight poly(vinyl chloride) compositions comprise a sequentially produced polymer characterized by 1 to 30 weight percent of (A) a first relatively soft stage characterized by a glass transition temperature of 60° C. or less; and 99 to 70 weight percent of (B) a final substantially thermoplastic stage polymerized in the presence of a product containing the first stage, and in intimate contact with the first stage and further characterized in that if the monomer or monomers were polymerized in the absence of the product of the first stage, a polymer would be formed having a glass transition temperature of 25° C. or greater.

3,833,687

COMPOSITION OF A POLYPHENYLENE ETHER, A BLOCK COPOLYMER OF A VINYL AROMATIC COMPOUND WITH A CONJUGATED DIENE AND A GRAFT INTERPOLYMER OF AN ACRYLIC MONOMER WITH A DIENE RUBBER

Gim F. Lee, Jr., Albany, N.Y., assignor to General Electric Company

No Drawing. Filed Aug. 23, 1972, Ser. No. 283,091
Int. Cl. C08f *15/00, 19/00*
U.S. Cl. 260—876 R 12 Claims

There are provided compositions comprising (a) a polyphenylene ether, (b) a normally rigid block copolymer of a vinyl aromatic compound and a conjugated diene, and (c) a graft interpolymer of an acrylate monomer and a diene rubber. The three-component composition provides unexpected improvements in toughness in parts molded therefrom and such properties are improved without substantially impairing gloss or surface appearance.

3,833,688

COMPOSITION OF A POLYPHENYLENE ETHER AND AN ACRYLIC RESIN IN COMBINATION WITH A DIENE RUBBER-CONTAINING RESIN

Visvaldis Abolins, Delmar, and Donald L. Reinhard, Albany, N.Y., assignors to General Electric Company

No Drawing. Filed Oct. 14, 1971, Ser. No. 189,393
Int. Cl. C08d *9/10*; C08f *29/12, 41/12*
U.S. Cl. 260—876 R 7 Claims

There are provided compositions comprising a polyphenylene ether and an acrylic resin in combination with a diene rubber-containing resin, the compositions optionally containing a styrene resin. Illustratively, the addition of an acrylic resin modified butadiene rubber-acrylonitrile-styrene resin to polyphenylene ethers or mixtures of polyphenylene ethers and polystyrenes provides unexpected improvements in toughness in parts molded from the compositions, and in their resistance to gasoline. Such properties are improved without substantially impairing gloss or surface appearance.

3,833,689

ELASTOMERIC COMPOSITIONS CONTAINING OLEFIN-ACRYLIC ESTER COPOLYMER

Teruyoshi Usamoto, Higashi-osaka, Taisuke Okita, Toyonaka, Nobuyuki Yoshida, Takatsuki, Masaaki Hirooka, Ibaraki, Isoji Taniguchi, Toyonaka, and Shyozaburo Imai, Ibaraki, Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka-shi, Japan

No Drawing. Continuation of abandoned application Ser. No. 29,276, Apr. 16, 1970. This application Aug. 10, 1972, Ser. No. 279,289
Claims priority, application Japan, Apr. 16, 1969, 44/29,900; Mar. 5, 1970, 45/19,442
Int. Cl. C08f *37/18*
U.S. Cl. 260—897 B 26 Claims

Elastomeric compositions comprising 1 part by weight of at least one curable elastomer and 0.01 to 100 parts by weight of at least one copolymer having olefin and acrylic ester monomer units as the main constituents, which possess improved properties in tackiness, processability, oil resistance, thermal resistance, weathering resistance and the like.

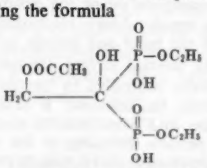
3,833,690

ETHANE DIPHOSPHONIC ACID ESTERS

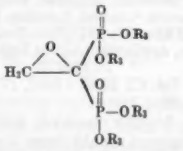
Al F. Kerst, Littleton, Conn., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Original application Apr. 13, 1970, Ser. No. 27,988, now Patent No. 3,705,191. Divided and this application Aug. 23, 1972, Ser. No. 283,147
Int. Cl. C07f *9/40*
U.S. Cl. 260—932 2 Claims

New and useful substituted ethane diphosphonic acids and salts and esters thereof as exemplified by the ester compound having the formula



diethyl-2-acetoxy - 1 - hydroxy - ethane-1,1-diphosphonate and processes for preparing the same which generically comprise the "de-oxiranization" of an epoxy ethane diphosphonate having the formula



wherein R_3 is hydrogen, a metal ion, or an organic radical.

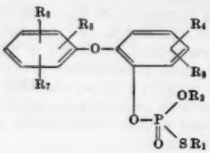
3,833,691

2-(O,S-DILOWER ALKYL-THIOLPHOSPHORYL) DIPHENYL ETHERS

Paul Rathgeb, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed June 20, 1973, Ser. No. 371,905
Claims priority, application Switzerland, June 23, 1972, 9,529/72; May 22, 1973, 7,290/73
Int. Cl. A01n 9/36; C07f 9/16
U.S. Cl. 260—951 10 Claims

New diphenyl ethers of the formula



(I

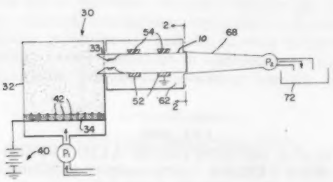
wherein R_1 represents alkyl with 1 to 4 carbon atoms, R_2 represents methyl or ethyl, R_3, R_4, R_5, and R_6 represent hydrogen, chlorine, or bromine, and R_7 represents hydrogen, chlorine, or nitro and their use for combating insects and members of the order Acarina are disclosed.

3,833,692

METHOD FOR MAKING TUBULAR CONTAINERS

Richard R. Szatkowski, Western Springs, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Filed Nov. 7, 1972, Ser. No. 304,443
Int. Cl. B29c 1/14
U.S. Cl. 264—24 3 Claims



A method for making seamless tubular containers having a first end terminating in a shoulder and threaded neck of a reduced diameter with increased wall thickness and a second open end. The process uses a mold having an internal surface configuration corresponding to the exteral configuration of the desired tubular container. Suction means draws electrostatically charged powder through the mold and permits a portion thereof to deposit on the internal surface, the amount of deposition being partially controlled by the surface configuration. Subsequently, the container is heated to fuse the deposited powder into homogeneous mass, while subsequent cooling permits shrinking of the container away from the mold walls such that it may be removed by hand or by mechanical apparatus.

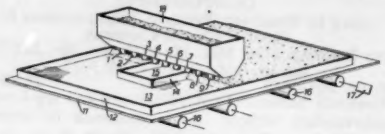
3,833,693

DISPENSING OF A MATERIAL INTO A MOULD

Keith Ross, Sheffield, England, assignor to Go-Con Concrete Limited, London, England

Filed May 21, 1971, Ser. No. 145,649
Claims priority, application Great Britain, May 26, 1970, 25,166/70
Int. Cl. B28b 13/02, 17/00
U.S. Cl. 264—40 5 Claims

To dispense flowable material, such as wet concrete, into an open topped mould from a reservoir having a plurality of separately controllable outlets arranged side-by-side in line, the mould and the outlets are positioned with the outlets above a datum at one end of the mould and relative movement is caused to take place between the outlets and the mould in a horizontal direction normal to the line of the outlets. Signals are obtained continuously representing the position of the outlets from the datum and these signals are compared with signals



on a prepared programme for the operation of the outlets. The outlets are opened and closed automatically to bring about flow of the material into the mould.

The weight of material which has been dispensed may at all times be compared with the calculated weight which should have been dispensed and the speed of displacement between the mould and the outlets is adjusted to bring about a correct rate of delivery of the material.

3,833,694

MOLDING POLYURETHANE FOAM IN A MOLD HAVING A CYCLICALLY FLEXING COVER

Charles R. Hughes, Hellertown, Pa., assignor to Bethlehem Steel Corporation

Filed July 5, 1972, Ser. No. 268,942
Int. Cl. B29d 27/00
U.S. Cl. 264—51 2 Claims

A polyurethane foam core wall panel is produced by placing a quantity of foam in a mold comprising a bottom panel, a border and a top panel, and, while the expanding foam is in contact with the top panel, cyclically flexing the top panel until the foam has completely filled the mold.

3,833,695

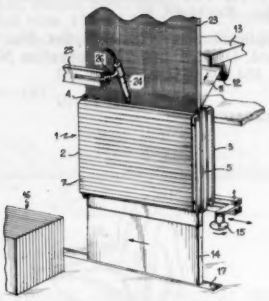
METHOD AND APPARATUS FOR PRODUCING ELEMENTS BY MOULDING

Paul Benjamin Vidal, Parc de la Noue, Villepinte, Seine Saint-Denis, France

Filed Mar. 20, 1972, Ser. No. 236,073
Claims priority, application France, Mar. 22, 1971, 7109982
Int. Cl. B29d 27/03
U.S. Cl. 264—47 7 Claims

The disclosure herein describes a method for producing panels by moulding. A porous grid is introduced into a vertical mould consisting of endless belts moving from top to bottom of the mould. At the same time, a filler material, such as an expansible phenolic resin, is fed into

the mould through pouring heads which carry out a reciprocating motion along the upper part of the mould. The phenolic resin expands in the grid, occupying all of



the pores or cells therein. The panel obtained may be used in building to construct walls, partitions, floors, and ceilings.

3,833,696

METHOD OF MAKING A DISPLAY DEVICE FOR PLANTS

Fritz Kramer, 60—11 Broadway, Woodside, N.Y. 11377

Continuation-in-part of abandoned application Ser. No. 259,483, June 5, 1972. This application July 9, 1973, Ser. No. 377,286

Int. Cl. B29d *27/00*

U.S. Cl. 264—51 **7 Claims**

A display device for cut flowers is prepared by injecting an aqueous solution of urea-formaldehyde precondensate containing about 40% by weight of solids, a small amount of phosphoric acid as a catalyst, and a foam-stabilizing surfactant, with compressed air into an open polyethylene bag, and heat-sealing the open side of the bag before the water could evaporate from the foam which gradually solidifies. When small holes are punched in the bag and the stems of flowers are inserted, the flowers are kept fresh.

3,833,697

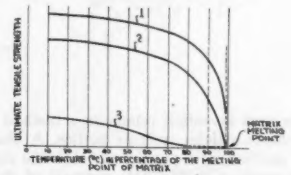
PROCESS FOR CONSOLIDATION AND EXTRUSION OF FIBER-REINFORCED COMPOSITES

Paul J. Lare, Bowie, Md., and Amarnath P. Divecha, Falls Church, Va., assignors to Melpar, Inc., Falls Church, Va.

Filed Feb. 14, 1969, Ser. No. 799,329

Int. Cl. C04b *33/32, 35/72*

U.S. Cl. 264—60 **10 Claims**



A fiber-reinforced metal composite of desired shape is produced by consolidating a mixture of the metal matrix and the fibers under pressure with the mixture maintained at a temperature above the solidus of the matrix system. Following the desired consolidation, the composite is extruded by lowering its temperature to a value in the range from 90% to 98% of the melting point of the matrix, and increasing the pressure to a value exceeding the consolidation pressure. To permit extrusion of the just consolidated body, the press in which consolidation is performed contains a die cavity plugged by an extrudable seal.

3,833,698

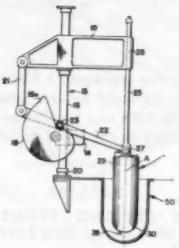
METHOD FOR FORMING FIBER PREFORMS

Arthur J. Wiltshire, Cleveland, Ohio, assignor to Structural Fibers, Inc., Chardon, Ohio

Original application May 14, 1970, Ser. No. 37,173, now Patent No. 3,687,587. Divided and this application Apr. 6, 1972, Ser. No. 241,718

Int. Cl. B29c *5/06*

U.S. Cl. 264—91 **5 Claims**



A method of forming a fiber preform for use in the manufacture of fiber-reinforced molded resin articles is disclosed. In accordance with the method, a perforated screen form having an interior surface which defines the shape of the preform to be formed is rotated about its longitudinal axis within a surrounding vacuum chamber. Chopped fibers are directly deposited in a localized manner onto the interior surface of the screen form from a moving fiber dispensing point within the screen form. The fiber dispensing point is moved along a path which closely follows the rotating, longitudinal contour of the interior surface of the screen form so as to progressively, uniformly cover the entire interior surface with chopped fibers which are held in place by the air flow through the screen form and into the vacuum chamber. The deposited chopped fibers are sprayed with a heat curable resin binder which is subsequently cured.

3,833,699

METHOD OF FORMING CORRUGATED TUBING USING A MANDREL HAVING INFLATABLE SLEEVES ADJACENT THE ENDS

Joseph Anthony Stefanka, North Baltimore, Ohio, assignor to Norbalt Rubber Corporation, North Baltimore, Ohio

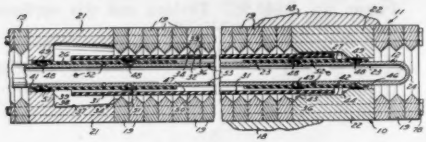
Filed Oct. 26, 1971, Ser. No. 192,439

Int. Cl. B29c *17/07*

U.S. Cl. 264—94 **12 Claims**

A method for forming corrugated tubing is disclosed. The corrugated tubing is formed from a cylindrical uncured tube of plastically deformable material. Such tube is inflated in a separable mold to an intermediate shape in

which shallow extended corrugations are provided. The intermediate tube is subsequently placed on a curing mandrel in the final shape required and is cured. The apparatus for forming the intermediate tube includes separable mold halves each consisting of a plurality of separate corrugation forming sections and two end forming sections. The initial tube is positioned over an inflatable mandrel having spaced elastic sleeves and is enclosed within the mold halves. The sleeves extend to deform the ends of the initial tube and form a seal therewith. Subsequently, air under pressure is admitted to the interior of the tube to complete its inflation. The number of corrugations formed in the tube can be changed by



removing or inserting corrugation forming sections in the active portion of the mold halves. Similarly, the type of end formed on the tube can be changed by changing the end forming sections in the mold halves.

3,833,700

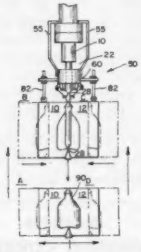
PROCESS FOR CLOSING TUBULAR PARISONS AND BLOW MOLDING HOLLOW CONTAINERS THEREFROM

Domas Adomaitis, Chicago, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Filed Mar. 9, 1972, Ser. No. 233,136

Int. Cl. B29c *17/07*

U.S. Cl. 264—96 **10 Claims**



Process for blow molding hollow containers. A tubular parison is extruded and a portion thereof is closed to form a parison bottom by circumferentially reducing the diameter thereof and welding the interior surfaces together. A blow mold is aligned with its bottom in alignment with the parison bottom and a further portion of the parison is closed above the mold. The mold is closed about the parison and the parison is expended thereagainst, the closed mold grasping the first closed portion of the parison to form a weld line of reduced length.

3,833,701

METHOD OF MAKING AN AURAL HEARING PROTECTING DEVICE

Theodore K. Johnson, Elnora, N.Y., and Joseph Sataloff, Bala-Cynwyd, Pa., assignors to Marion Health and Safety, Inc., Rockford, Ill.

Original application Sept. 28, 1970, Ser. No. 75,877, now abandoned. Divided and this application Nov. 6, 1972, Ser. No. 304,298

Int. Cl. A61f *11/02*

U.S. Cl. 264—129 **9 Claims**

An aural hearing protecting device of formed-in-place elastomeric composition constructed especially to provide a smooth, tight seal over the mouth of the ear canal when stretched.

3,833,702

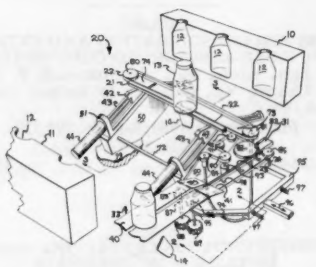
METHOD FOR REMOVING FLASH MATERIAL FROM BLOWN PLASTIC ARTICLES

Joseph E. Boyer, Warson Woods, Mo., assignor to Owens-Illinois, Inc., Toledo, Ohio

Original application June 3, 1970, Ser. No. 42,929, now Patent No. 3,677,454, dated July 18, 1972. Divided and this application May 17, 1972, Ser. No. 254,182

Int. Cl. B29c *17/12*

U.S. Cl. 264—161 **2 Claims**



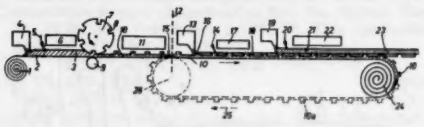
The present invention relates to a method for making blown plastic articles such as bottles. A coacting chain and bar mechanism is positioned below the dies of a blow molding machine to facilitate removal of the blown article by grasping the tail portion thereof. Separation of the tail from the blown article is achieved by moving the article up an inclined plane in a direction away from the moving chain.

3,833,703

STRUCTURED SYNTHETIC WEB MATERIAL AND METHOD FOR THE PRODUCTION THEREOF

Pierre Emmanuel Joos, Gleize par Villefranche-sur-Saone, France, assignor to Continental Linoleum-Union Betriebs AG, Zurich, Switzerland

Filed Mar. 17, 1972, Ser. No. 235,669
Claims priority, application France, Mar. 22, 1971, 7109967
Int. Cl. D01d 5/20
U.S. Cl. 264—167 7 Claims



A flexible synthetic surface structured web material embodying a discontinuous upper layer formed of cross-linked plastic with a Young's bending modulus of elasticity in a range of 10,000 to 30,000 kg./cm.² and a continuous lower layer or stratum formed of cross-linked plastic with a Young's bending modulus of elasticity in a range of 3,000 to 10,000 kg./cm.², both layers being bonded to one another by common or joint polymerization.

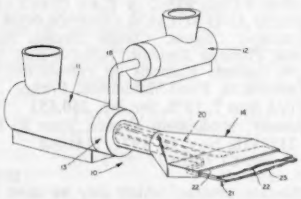
The method for the production of such flexible synthetic surface structured web materials comprises applying to a molding band possessing recesses a first mass containing a hardenable polyester mixture, possessing a Young's bending modulus of elasticity following polymerization which is in a range of 10,000 to 30,000 kg./cm.². There is applied such quantity of this mass to the molding band that only the recesses thereof are filled, and thereafter such mass is gelled. A second mass is applied to the gelled cooled mass discussed above, this second mass containing a hardenable polyester mixture possessing a Young's bending modulus of elasticity following polymerization which is in a range of 3,000 to 10,000 kg./cm.², the second mass is then levelled into a layer and the entire structure or arrangement is then hardened at elevated temperatures and removed from the molding band so that there is obtained a dual-layer structured web material.

3,833,704

METHOD OF EXTRACTING A PLURAL LAYERED SHEET

Frank R. Nissel, Ambler, Pa., assignor to Welex, Inc., King of Prussia, Pa.

Continuation-in-part of abandoned application Ser. No. 118,410, Feb. 24, 1971. This application June 19, 1972, Ser. No. 264,387
Int. Cl. B29f 3/10; B32b 15/08, 31/30
U.S. Cl. 264—171 11 Claims



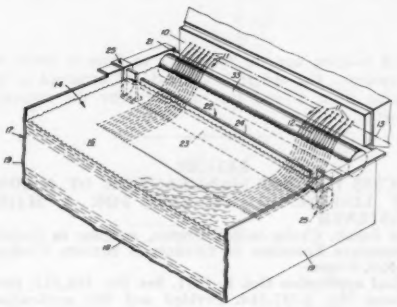
A thermoplastic sheet comprising a lamina bearing base is produced by feeding a heat-plastified laminated rod into a conventional sheet forming die. The laminated rod is formed using an adapter die which is interposed between a rod-forming die and the sheet forming die and which deposits a layer of heat-plastified material constituting the lamina on a segment of the peripheral surface of the cross-section of a heat-plastified rod of the base material, as the rod is extruded from the rod-forming die. The sheet forming die converts the heat-plastified laminated rod into a laminated sheet.

3,833,705

PROCESS FOR CONTROLLING STRAND DROP-OFF

John Moziek, South Hadley, Mass., assignor to Monsanto Company, St. Louis, Mo.

Original application May 14, 1971, Ser. No. 143,574, now Patent No. 3,733,153. Divided and this application Sept. 21, 1972, Ser. No. 290,991
Int. Cl. D01d 5/08
U.S. Cl. 264—178 F 1 Claim



A process for controlling strand drop-off at an extrusion die in a plastic stranding operation is provided. A plurality of hot polymer strands generally uniformly spaced from one another in a horizontal direction from the extrusion die pass downwardly into a cooling bath beneath a hold down bar assembly. The continuously moving strands slidably engage circumferential surface portions of a cylindrical member positioned in the surface of the cooling bath which is revolvably driven by the strands passing thereover. When a strand breaks, it almost immediately contacts an adjacent strand and is immediately bonded thereto, all strands still being in a thermoplastic condition, so that all strands continue to move forward down into the cooling bath without loss of the broken strand.

3,833,706

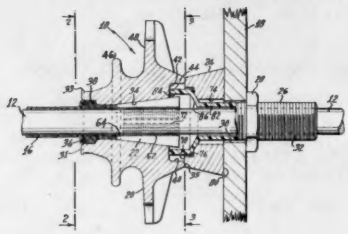
METHOD OF FORMING STRESSED CONCRETE

Hugh J. W. Edwards, Cobham, England, assignor to Cable Covers Limited, London, England

Original application Aug. 27, 1968, Ser. No. 755,577, now abandoned. Divided and this application July 19, 1971, Ser. No. 163,777
Int. Cl. B28b 23/04
U.S. Cl. 264—228 10 Claims

A method of forming stressed concrete articles including post tensioning of a stressing tendon and utilizing an anchorage assembly including an anchor having a hollow housing and means therein for engaging a stressing tendon passing therethrough. The assembly includes a hollow member removably attached to the anchor housing and to the concrete formwork and fixing the relative position of the anchor housing to the formwork. The member surrounds the tendon between the anchor housing and the

formwork and is adapted and arranged to be detached from the anchor housing after the concrete has set. A cavity forming spacer is provided which surrounds the member and is disposed between and seals against the



anchor housing and the formwork to form a cavity in the concrete. The spacer is adapted and arranged to be removed from around the member after the concrete has set.

3,833,707

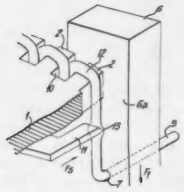
PROCESS FOR THE MANUFACTURE OF A ROW OF LINKING COMPONENTS FOR A SLIDE FASTENER

Horst Jakob, Choisy-le-Roi, France, assignor to Societe Financiere Francaise de Licences et Brevets, Choisy-le-Roi, France

Original application Oct. 5, 1971, Ser. No. 186,612, now Patent No. 3,787,164. Divided and this application July 25, 1973, Ser. No. 382,584

Int. Cl. B29d *5/00*

U.S. Cl. 264—285 **1 Claim**



In a known process and apparatus for the production of a continuous row of linking components for a slide fastener, using a plastic thread, the plastic thread is shaped into a spiral over and between a series of studs by means of a thread guide. One of the ends of each whorl of the spiral is crushed by means of a punch to form a linking component, while holding the corresponding whorl between the studs. The invention provides the improvement in that, on the crushing-point side of each whorl, the corresponding portion of the thread is stretched out rectilinearly beyond the crushing point and facing the corresponding side face of the thread guide. The required point of the thread is then crushed against the thread guide, which is used as an anvil, the punch used being independent of the other working tools, and the folding back of the corresponding portion of the thread being performed only after the crushing has been carried out.

3,833,708

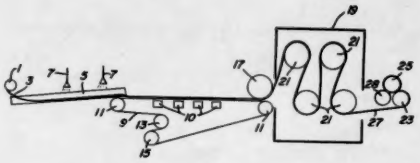
IMMISCIBLE POLYMER PRODUCTS AND PROCESSES

Walter A. Miller and William P. Mulvaney, Somerville, N.J., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of abandoned application Ser. No. 831,659, June 9, 1969. This application Aug. 4, 1972, Ser. No. 278,076

Int. Cl. B29c *25/00*

U.S. Cl. 264—344 **7 Claims**



The invention relates to making shaped articles of immiscible polymers using as one of the polymers, a copoymer of ethylene and acrylic and/or methacrylic acid which can be readily solubilized to allow its rapid extraction with water. These may also be added in an extraction aid, such as glycerine, in making the shaped article.

The water extracted product can be a tow or web of ultra-fine fibers.

3,833,709

RECOVERY OF MAGNESIUM CHLORIDE HEXAHYDRATE FROM CARNALLITE ORE

Pierre J. Chassagne, Palo Alto, Calif., assignor to Bechtel International Corporation

No Drawing. Continuation-in-part of abandoned application Ser. No. 230,986, Mar. 1, 1972. This application Apr. 2, 1973, Ser. No. 347,222

Int. Cl. B01d *11/02;* **C01d** *3/18;* **C01f** *5/30*

U.S. Cl. 423—157 **2 Claims**

The various standard texts on mineralogy give the composition of carnallite as $MgCl_2 \cdot KCl \cdot 6H_2O$. In industrial usage, the term "carnallite ores" is used as referring to the foregoing salt mixture together with various other salts such as sodium chloride and other insoluble materials either as a broken ore or in the form of a natural deposit. I have found that by treating carnallite ores with any one of the lower saturated monohydric aliphatic alcohols having from 1 to 4 carbon atoms such as methanol, ethanol, propanol, isopropyl alcohol, n-butyl alcohol, secondary-butyl alcohol, iso-butyl alcohol and tert-butyl alcohol, the magnesium choride hexahydrate goes into soution leaving the potassium chloride and other salts and insoluble materials as an insoluble residue.

3,833,710

PROCESS FOR PURIFYING A GAS CONTAINING OXYGEN AND SULFUR COMPOUNDS

André Deschamps, Chatou, Claude Dezael, Maisons-Laffitte, and Philippe Renault, Noisy-le-Roi, France, assignors to Institute Francais du Petrole des Carburants et Lubrifiants, Rueil-Malmaison, France

Filed June 7, 1972, Ser. No. 260,653

Claims priority, application France, June 8, 1971, 7120818; Nov. 16, 1971, 7141068

Int. Cl. C01b *17/00, 17/02*

U.S. Cl. 423—573 **10 Claims**

The purification process, which may be used for removing sulfur dioxide from industrial fumes, comprises several interconnected steps: absorption in a solution of alkali metal or ammonium sulfite, contact of the latter with a weak anion exchanger, for example an amine or a

polymeric amine, periodic regeneration of the exchanger by means of ammonia, recycling of the absorption solution and conversion of the recovered ammonium sulfite to sulfur. The so defined process has low power requirements and yields sulfur practically free of by-products.

3,833,711
REMOVAL OF SULFUR DIOXIDE FROM GAS STREAMS

John F. Villiers-Fisher, Kendall Park, N.J., assignor to Chemical Construction Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 89,868, Nov. 16, 1970, now Patent No. 3,709,977. This application Aug. 14, 1972, Ser. No. 280,728
Int. Cl. C01b *17/00;* **C01j** *9/041, 9/08*
U.S. Cl. 423—244 **9 Claims**

Sulfur dioxide is removed from a gas stream which initially contains sulfur dioxide and sulfur trioxide, by initially contacting the gas stream with discrete porous solid particles of an inorganic alkali which may be in equilibrium with respect to sulfur dioxide absorption and which could be primarily alkali sulfite during much of its effective life. The sulfur trioxide component of the gas stream reacts with the inorganic alkali solid generally, displacing any previously absorbed, sulfur dioxide, and a second gas stream is produced which is substantially devoid of sulfur trioxide. The second gas stream is scrubbed with a liquid containing an active alkaline component for the absorption of sulfur dioxide, and a final gas stream free of sulfur oxides is produced. The invention prevents the absorption of sulfur trioxide by the scrubbing liquid, and thus greatly reduces the build up of sulfates in the scrubbing liquid, which are difficult to regenerate. Thus, a net loss of active alkaline component due to sulfate formation is prevented.

3,833,712
ANTI-POLLUTION BY-PRODUCT FROM PHENOLIC CONTAMINANTS

Edgar Bradbury Baker, Springfield, Oreg., assignor to Borden, Inc., Columbus, Ohio

No Drawing. Filed Aug. 25, 1972, Ser. No. 283,920
Int. Cl. C08g *51/24*
U.S. Cl. 423—245 **4 Claims**

Atmospheric pollution by volatile phenolic contaminants in industrial effluent gas streams is substantially reduced by absorbing said contaminants in an aqueous solution of a water-soluble alkaline phenolformaldehyde resin, condensing the mixture of absorbing resin and absorbed contaminants to form an augmented resin, optionally repeating the absorbing and recondensing steps finally to form a useful by-product resin suitable as a component of an adhesive.

3,833,713
METHOD OF MANUFACTURING SYNTHETIC CRYOLITE

Jacqueline C. Kane, Leonia, N.J., assignor to Stauffer Chemical Company, Westport, Conn.

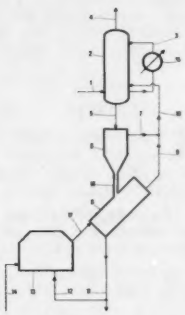
No Drawing. Continuation of application Ser. No. 124,418, Mar. 15, 1971, which is a continuation-in-part of application Ser. No. 23,516, Mar. 27, 1970, which in turn is a continuation-in-part of abandoned application Ser. No. 687,983, Dec. 5, 1967. This application Jan. 5, 1973, Ser. No. 321,199
Int. Cl. C01b *33/00, 33/12;* **C01f** *7/50*
U.S. Cl. 423—465 **17 Claims**

A process for recovering fluorine values from effluent gases and converting them to cryolite which involves the steps of reacting said gas with ammonium derivatives to produce ammonium fluoride. Then the ammonium fluoride is reacted with clay which is an aluminosilicate composition containing clay forming minerals such as kaolinite, halloysite, montmorillonite, illite and mixtures thereof. Optionally, the ammonium cryolite thus produced can be reacted with sodium hydroxide to produce sodium cryolite.

3,833,714
REMOVAL OF THE HYDROGEN SULFIDE CONTAINED IN A GAS OF HIGH CARBON DIOXIDE CONTENT

Philippe Renault, Noisy-le-Roi, Andre Deschamps, Chatou, and Claude Dezael, Maisons-Laffitte, France, assignors to Institute Francais du Petrole, des Carburants et Lubrifiants, Rueil-Malmaison, France

Filed June 19, 1972, Ser. No. 264,374
Claims priority, application France, June 24, 1971, 7123180
Int. Cl. C01b *17/00, 17/60;* **C01c** *1/10*
U.S. Cl. 423—567 **10 Claims**



Process for removing hydrogen sulfide from a gas containing the same in admixture with a large amount of carbon dioxide, comprising the successive steps of contacting said gas with an aqueous solution of ammonium sulfite so as to form ammonium thiosulfate, decomposing the latter to sulfur, ammonia, sulfur dioxide and water, recovering said sulfur and recycling said ammonia, sulfur dioxide and water to the contact zone in order to regenerate the ammonium sulfite solution.

3,833,715
PROCESS FOR MANUFACTURING SULFUR OR SULFUROUS ANHYDRIDE FROM AMMONIUM SULFATES

Andre Deschamps, Chatou, Claude Dezael, Maisons-Laffitte, and Philippe Renault, Noisy-le-Roi, France, assignors to Institut Francais du Petrole, des Carburants et Lubrifiants, Rueil-Malmaison, France

No Drawing. Filed July 17, 1972, Ser. No. 272,449
Claims priority, application France, July 20, 1971, 7126613; Oct. 20, 1971, 7137788
Int. Cl. C01d *17/02;* **C01c** *1/10, 11/60*
U.S. Cl. 423—573 **9 Claims**

Sulfur and/or sulfurous anhydride are manufactured by reacting hydrogen sulfide or ammonium sulfide with an ammonium salt of an oxygenated sulfur acid. The improvement consists of carrying out the reaction within molten sulfur, whereby corrosion is considerably reduced.

3,833,716
METHOD FOR USING REHEAT GAS IN SULFUR RECOVERY SYSTEMS

John W. Palm, Tulsa, Okla., assignor to Amoco Production Company, Tulsa, Okla.

Filed Aug. 2, 1972, Ser. No. 277,421
Int. Cl. C01b *17/04*
U.S. Cl. 423—574 **4 Claims**

Proper reheat gas temperature is maintained in a sulfur plant operation at a high turn-down ratio by providing

parallel flow paths in the boiler and withdrawing portions of the hot products from each of the flow paths and mixing with first condenser effluent to bring the gas to reaction temperature. This maintains the optimum temperature and flow rate of reheat gas at high turn-down ratios.

3,833,717

PRODUCTION OF CUPROUS OXIDE

Phillip R. Haskett, Donald J. Bauer, Roald E. Lindstrom, and Carl H. Elges III, Reno, Nev., assignors to the United States of America as represented by the Secretary of the Interior

No Drawing. Filed Aug. 1, 1972, Ser. No. 277,016

Int. Cl. C01g *3/02, 5/00, 7/00*

U.S. Cl. 423—604 **1 Claim**

Cupric ammine complex is reduced to cuprous ammine complex in aqueous solution by means of conventional reducing agents such as H_2 or CO. The cuprous complex is then treated with a base, such as NaOH, to precipitate cuprous oxide.

3,833,718

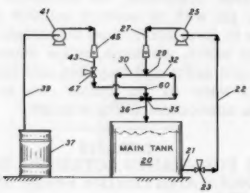
METHOD OF MIXING AN AQUEOUS ALUMINUM SALT SOLUTION AND AN ALKALINE BASE SOLUTION IN A JET MIXER TO FORM A HYDROXY-ALUMINUM SOLUTION

Marion G. Reed, Hacienda Heights, and Ralph S. Millhone, Brea, Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation of abandoned application Ser. No. 130,689, Apr. 2, 1971. This application July 2, 1973, Ser. No. 376,024

Int. Cl. C01f *7/02*

U.S. Cl. 423—629 **6 Claims**



Method and apparatus for high shear mixing particularly useful in preparing hydroxy-aluminum solution for use in well treating.

3,833,719

METHOD AND APPARATUS FOR MIXING GAS AND LIQUID

Heribert Kuerten, Mannheim, Otto Nagel, Neustadt, Rolf Platz, Mannheim, and Richard Sinn, Ziegelhausen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

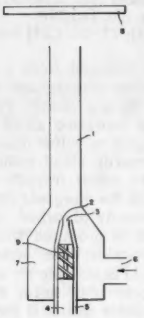
Filed Feb. 16, 1972, Ser. No. 226,808

Claims priority, application Germany, Feb. 19, 1971, P 21 07 960.7

Int. Cl. B01f *3/00*

U.S. Cl. 423—659 **7 Claims**

The invention relates to a method of mixing a gas with liquids in a tubular reactor by feeding the gas and the liquids to a mixing zone. The invention also relates to an apparatus for carrying out this method. Rapid mixing is effected by feeding a stream of liquid to the mixing zone through one or more nozzles whose axes extend in the same direction as the axis of the mixing zone, the injected liquid having a velocity of from 5 to 100 m./s., whilst a second stream of liquid of much lower velocity is introduced into the reactor inlet zone surrounding said nozzles. The gas is fed to the mixing zone through one



or more gas inlets located near the orifices of the liquid nozzles. The mean cross-sectional area of the mixing zone bears a specific ratio to the cross-sectional area of the orifices of the liquid nozzles and the length of the mixing zone bears a specific ratio to the hydraulic diameter thereof. The method and apparatus are particularly suitable for carrying out reactions in which short residence times are desirable and the reaction products must not recontact the starting materials.

3,833,720

ASTRINGENT COMPOSITIONS

James M. Crotty, Beverly, Daniel C. Geary, Acton, Edward F. Levy, Newtonville, Dolores V. Lopiekes, Bridgewater, Robert L. Raymond, Marblehead, and Bernard Siegal, Bedford, Mass., assignors to The Gillette Company, Boston, Mass.

No Drawing. Filed July 14, 1972, Ser. No. 272,043

Int. Cl. A61k *7/00*

U.S. Cl. 424—47 **6 Claims**

The present invention is concerned with aerosol spray anti-perspirant compositions of the type in which the astringent material is suspended as a solid in an anhydrous liquid vehicle and dispensed in this form and more particularly with anti-perspirant compositions of this type which have substantially reduced propensity to stain clothing. Generally such improvements are brought about by using as the liquid vehicle for such compositions esters of mono-, di-basic acids which are miscible with the propellant and which are selected from the group consisting of methyl lactate, ethyl lactate, propyl lactate, isopropyl lactate, butyl lactate, dimethyl succinate, diethyl succinate, diisopropyl succinate, dipropyl succinate, dibutyl succinate, diethyl malate, diethyl maleate, diethyl tartrate, diisopropyl tartrate, dipropyl tartrate, dibutyl tartrate, dimethyl glutarate, diethyl glutarate, diisopropyl glutarate, dipropyl glutarate, dibutyl glutarate, dimethyl adipate and diethyl adipate.

3,833,721

ASTRINGENT COMPOSITIONS

Robert E. Saute, Los Angeles, Calif., and Bernard Siegal, Bedford, Mass., assignors to The Gillette Company, Boston, Mass.

No Drawing. Filed July 14, 1972, Ser. No. 272,044

Int. Cl. A61k 7/00

U.S. Cl. 424—47 9 Claims

The present invention is concerned with aerosol spray anti-perspirant compositions of the type in which the astringent material is suspended as a solid in an anhydrous liquid vehicle and dispensed in this form and more particularly with anti-perspirant compositions of this type which have substantially reduced propensity to stain clothing. Generally such improvements are brought about by using as the liquid vehicle for such compositions esters which are miscible with the propellant and which are formed from tri-basic acids and lower aliphatic alcohols.

3,833,722

METHOD FOR CONTROLLING ALLERGIES

Doris Elaine Graybill, 2136 New Holland Pike, Lancaster, Pa. 17601

No Drawing. Filed Mar. 16, 1971, Ser. No. 124,946

Int. Cl. A61k 27/00

U.S. Cl. 424—104 2 Claims

A method is provided for treating and controlling allergies caused by excess concentrations of certain metal ions in the body tissues of warm-blooded animals. In the method of this invention, the excess concentrations of the metallic ions are removed from the body tissues of the animal, preferably by administrating secretin which naturally induces the release of alkaline materials which in turn assists in the neutralizing and removal of the excess concentrations of the metal ions.

3,833,723

ALAMETHICIN AND PRODUCTION THEREFOR

John H. Coats, Kalamazoo, Curtis E. Meyer, Galesburg, and Fritz Reusser, Portage, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Dec. 29, 1965, Ser. No. 527,635

Int. Cl. A61k 21/00

U.S. Cl. 424—118 10 Claims

This invention relates to new compound, alamethicin and to the process for the production thereof by culturing *Trichoderma viride* NRRL 3199.

3,833,724

TREATMENT OF SICKLE CELL ANEMIA

Anthony Cerami and James M. Manning, New York, N.Y., assignors to Research Corporation, New York, N.Y.

No Drawing. Filed Sept. 15, 1971, Ser. No. 180,900

Int. Cl. A61k 27/00

U.S. Cl. 424—129 5 Claims

It has been discovered that cyanate, such as a 0.01–1.0M potassium cyanate solution, is useful to prevent the sickling of the red blood cells of sickle cell anemia patients. It has also been discovered that red blood cells when taken from sickle cell anemia patients and treated *in vitro* with a cyanate, such as a sodium cyanate solution, evidence an increased survival or prolonged life when returned to the patient.

3,833,725

DIALKYLATED GLYCOL COMPOSITIONS AND MEDICAMENT PREPARATIONS CONTAINING SAME

Geoffrey F. Thompson, Sunnyvale, Calif., assignor to Syntex Corporation, Panama, Republic of Panama

No Drawing. Filed Dec. 8, 1972, Ser. No. 313,431

Int. Cl. A61k 27/00

U.S. Cl. 424—243 30 Claims

A pharmaceutical preparation having a minor amount of a medicament, a major amount of a dialkylated mono- or poly-alkylene glycol vehicle therefor, and a minor amount of one or more antioxidants for the dialkylated glycol vehicle.

3,833,726

1-OXO-SUBSTITUTED-TETRAHYDRONAPHTHALENES (SUBSTITUTED-TETRALONES)

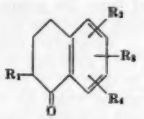
Charles F. Schwender, Lebanon, and John Shavel, Jr., Mendham, N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

No Drawing. Filed Dec. 13, 1971, Ser. No. 207,540

Int. Cl. C07c 49/80, 49/82

U.S. Cl. 260—590 9 Claims

Compounds of the formula are disclosed:



wherein R_1 is hydrogen, hydroxymethylene, benzylidene or benzylidene substituted by halogen or nitro; R_2, R_3 and R_4 are hydrogen, alkyl, alkoxy, amino, acylamino, carboxy, carboxyalkyl, halogen, hydroxy, nitro, allyl and methanesulfonylamino. These compounds are useful in providing symptomatic relief in allergic conditions such as asthma, hay fever and the like.

3,833,727

HYDRALAZINE AND β-ADRENERGIC BLOCKING AGENT COMPOSITIONS FOR TREATING HYPERTENSION

Carl E. Nelson and Alexander Scriabine, Ambler, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed Mar. 6, 1972, Ser. No. 232,294

Int. Cl. A61k 27/00

U.S. Cl. 424—248 12 Claims

Enhancement of the antihypertensive activity of hydralazine by the co-administration with a β-adrenergic blocking agent.

3,833,728

INDOLE DERIVATIVES IN THE TREATMENT OF SKELETAL MUSCLE FATIGABILITY

Nathan Norman Share and Cyril Stephen McFarlane, Montreal, Quebec, Canada, assignors to Merck Sharp & Dohme (I.A.) Corp., Rahway, N.J.

No Drawing. Original application Nov. 23, 1970, Ser. No. 92,299, now Patent No. 3,689,657. Divided and this application Mar. 24, 1972, Ser. No. 237,930

Int. Cl. A61k 27/00

U.S. Cl. 424—269 9 Claims

Skeletal muscle fatigability is treated by administration of a composition containing a skeletal muscle stimulant which is a derivative of indole-3-acetic acid or of indole-3-ylmethyltetrazole.

3,833,729

NOVEL PYRAZOLIDONE DERIVATIVES IN PHARMACEUTICAL COMPOSITIONS AND METHODS

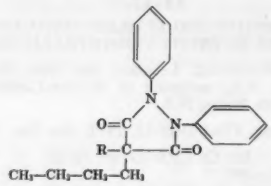
Georges Negrevergne, Bordeaux, France, assignor to The Purdue Frederick Company, Norwalk, Conn.

No Drawing. Application May 14, 1969, Ser. No. 856,508, now Patent No. 3,629,282, which is a division of application Ser. No. 691,197, Dec. 18, 1967, now Patent No. 3,487,046, which is a continuation-in-part of abandoned application Ser. No. 362,393, Apr. 24, 1964, which in turn is a continuation-in-part of abandoned application Ser. No. 121,796, Apr. 24, 1961. Divided and this application Nov. 18, 1971, Ser. No. 200,260

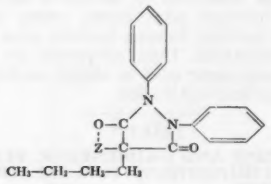
Int. Cl. A61k *27/00*

U.S. Cl. 424—273 10 Claims

Diphenylpyrazolidone derivatives, substituted on the 4 position and having the formula:



wherein R is selected from the group consisting of glycoses of from 3 through 6 carbons in chain length, polyoxyethylene having a molecular weight of from 200 through 2000 and an ionic exchange resin which is a polymeric condensation product of a phenol, formaldehyde and an alkylene polyamine which are known in the trade as Amberlite resins, and hydrogen bonded compounds of the structure:



wherein Z is a compound of the group selected from algin, gum guar, pectin, psyllium, dextran and polyvinylpyrrolidone and the methods for the preparation of the aforesaid compounds. The compounds are useful in achieving an anti-inflammatory effect.

ERRATUM

For Class 424—274 see:
Patent No. 3,833,571

3,833,730

ANIMAL FEED CONTAINING 7-ISOPROPOXY-ISOFLAVONE

László Feuer, Mihály Nógrádi, Agnes Gottsegen, Borbála Vermes, János Streliszky, András Wolfner, Loránt Farkas, Sándor Antus, and Maria Kovács Tóth, Budapest, Hungary, assignors to Chinoin Gyogyszer-es Vegyeszeti Termekek Gyara Rt., Budapest, Hungary

No Drawing. Filed May 25, 1971, Ser. No. 146,773

Claims priority, application Hungary, May 27, 1970, CI-996

Int. Cl. A61k *27/00*

U.S. Cl. 424—283 1 Claim

An animal feed containing 0.00002 to 0.1% of 7-isopropoxyisoflavone as a weight-gain promoting anabolic ingredient.

3,833,731

DIHALOMETHYLGLUTARONITRILES USED AS ANTIBACTERIAL AND ANTIFUNGAL AGENTS

Nathaniel Grier, Englewood, and Seymour J. Lederer, Fair Lawn, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed Dec. 28, 1970, Ser. No. 102,197

Int. Cl. A01n *9/06, 9/20*

U.S. Cl. 424—304 1 Claim

2-halo-2-halomethylglutaronitriles are useful in agricultural and in industrial applications as fungicidal and bactericidal agents.

3,833,732

METHOD OF TREATING INFLAMMATION UTILIZING ALKYL ESTERS OF GALLIC ACID

Sheikh Arshad Saeed, London, and Cyril Schneider, Middlesex, England, and Barrie Maurice Phillips, Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed May 24, 1973, Ser. No. 363,553

Int. Cl. A61k *27/00*

U.S. Cl. 424—308 4 Claims

The invention provides a method of alleviating inflammation, edema and/or pain in a mammal by administering to said mammal by the topical route gallic acid or an alkyl ester of gallic acid, the alkyl moiety of said ester having 1 to 8 carbon atoms.

3,833,733

METHOD OF ANESTHETIZING A MAMMAL BY ADMINISTRATION OF A SUBSTITUTED 2-ARYL-ALKYLOXY BENZAMIDE

Michel Leon Thominet, Paris, France, assignor to Societe d'Etudes Scientifiques et Industrielles de l'Ile-de-France, Paris, France

No Drawing. Application Jan. 22, 1971, Ser. No. 108,963, now Patent No. 3,723,416, which is a continuation-in-part of application Ser. No. 714,795, Mar. 21, 1968, now Patent No. 3,594,417. Divided and this application Jan. 17, 1973, Ser. No. 324,509

Claims priority, application France, Apr. 3, 1967, 101,328; June 23, 1967, 111,808

Int. Cl. A61l *27/00*

U.S. Cl. 424—324 8 Claims

Mammals are anesthetized by administration of 2-arylalkyloxy benzamides. When administered, the 2-arylalkyloxy benzamides of this invention are useful for the production of anesthesia, such as local anesthesia, in mammals. When administered intramuscularly, compounds of this invention show significant anesthesia when compared with xylocaine. Again, intradermic injections of 0.2 ml. of a solution of such a compound in concentrations varying from 0.1 to 1.25 mg./ml. effect suppression of platysma tremor produced by the prick of a pin in guinea pigs. The LD_{50} dosage of the compounds evaluated on mice and rats proved compatible in therapeutic use on mammals.

3,833,734

P-PHENYLENEDIAMINES AS HYPOLIPIDEMICS

Robert E. Manning, Mountain Lakes, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Continuation-in-part of application Ser. No. 111,106, Jan. 29, 1971, which is a continuation-in-part of application Ser. No. 69,429, Sept. 3, 1970, which in turn is a continuation-in-part of application Ser. No. 9,972, Feb. 9, 1970, all now abandoned. This application Jan. 15, 1973, Ser. No. 323,628

Int. Cl. A61k *27/00*

U.S. Cl. 424—330 9 Claims

Certain p-phenylenediamines, e.g., N^1,N^2-di-(2-octyl)-p-phenylenediamine, are useful as hypolipidemics.

3,833,735
GERMICIDAL USE OF 2,3,3-TRI-IODO-ALLYLALCOHOL
Sadaaki Mase and Shigeo Seki, Tokyo, Fumio Kai, Fujisawa, Tetsuro Watanabe, Yokohama, and Michiaki Iwata, Kawasaki, Japan, assignors to Meiji Seika Kaisha, Ltd., Tokyo, Japan
No Drawing. Filed Apr. 17, 1973, Ser. No. 352,072
Claims priority, application Japan, Apr. 16, 1972, 47/41,351
Int. Cl. A01n *9/24*
U.S. Cl. 424—343 **2 Claims**

2,3,3-Tri-iodo-allylalcohol is now found to be useful as a germicide of a low toxicity to control the growth of various bacteria and fungi which infest in crop plants, deteriorate organic material and/or form the slime occurring in the paper-making process.

3,833,736
CONTROL OF FUNGI
Eric Lionel Frick, Maidstone, and Roy Terry Burchill, Bearstead, England, assignors to National Research Development Corporation, London, England
No Drawing. Filed May 11, 1973, Ser. No. 359,505
Claims priority, application Great Britain, June 15, 1972, 28,026/72
Int. Cl. A01n *9/24*
U.S. Cl. 424—343 **11 Claims**

A method for the control of fungi which have an overwintering phase inside the buds of a plant or on other parts thereof comprises treating a plant selected from the group consisting of food crop and ornamental plants whilst the plant or at least the buds thereof are dormant or in a state of near dormancy with a fungicidal composition comprising as an active component a compound selected from the group consisting of medium chain aliphatic acids and alcohols, and esters of medium and short chain aliphatic acids.

3,833,737
TREATMENT OF GRAIN WITH YEAST AND FLOUR PRODUCED FROM SAID GRAIN
Jack Siegel, 10970 Palms Blvd., Los Angeles, Calif. 90034
No Drawing. Filed Nov. 6, 1972, Ser. No. 304,116
Int. Cl. A21d *8/02;* **A23l** *1/10*
U.S. Cl. 426—18 **7 Claims**

Cereal grains, such as wheat, rye, and the like, are contacted with a mixture of water and yeast for a time sufficient for said grains to imbibe a substantial quantity of said water. The grains are then milled into flour, either with or without a preliminary washing and/or a preliminary drying.

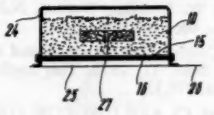
3,833,738
ALFALFA EXTRACT PROCESS
George Wheeler Edwards and Arrie Wood Edwards, both of Rte. 4, Kay Drive, Jackson, Tenn. 38301
No Drawing. Continuation-in-part of application Ser. No. 109,714, Jan. 25, 1971, now Patent No. 3,780,183. This application Sept. 19, 1973, Ser. No. 398,648
Int. Cl. A23l *1/42*
U.S. Cl. 426—52 **13 Claims**

Alfalfa or clover which has been previously treated with an aqueous basic solution is simultaneously digested with pancreatin and a bile containing material. A soluble fraction is then separated from the residue, both substances being useful as food for humans.

3,833,739
VITAMIN ENRICHED POTATO FLAKES
Dennis C. Pedersen, Minneapolis, and Philip M. Sautier, Edina, Minn., assignors to The Pillsbury Company, Minneapolis, Minn.
No Drawing. Filed Aug. 25, 1972, Ser. No. 283,880
Int. Cl. A23b *7/03;* **A23l** *1/12, 1/30*
U.S. Cl. 426—72 **5 Claims**

A vitamin enriched, dehydrated potato flake product is described herein. The potato flakes are irregular in shape having a thickness ranging from 0.005 to 0.015 inches and a diameter of approximately ⅛ to ¼ inch. Vitamin flakes of approximately the same size are incorporated with the potato flakes and are nonsegregating and difficult to detect visually. The vitamin flakes comprise from 50% to 75% fat which has a melting point of from 110° F. to 165° F. and alkyl chain lengths containing from 6 to 26 carbon atoms. Water-soluble vitamins and minerals make up the remainder of the flakes and are incorporated in and encapsulated by the fat.

3,833,740
ONE-PORTION PACK FOR THE PREPARATION OF GROUND ROASTED COFFEE READY FOR DRINKING
Ernst Schmidt, Bremen, Germany, assignor to Joh. Jacobs & Co., Bremen, Germany
Filed June 17, 1971, Ser. No. 154,106
Int. Cl. A23f *1/00;* **B65b** *29/02*
U.S. Cl. 426—80 **3 Claims**



A pack, particularly in the form of a container for ground roasted coffee, provided with filter paper for the preparation of a filtered coffee for drinking, wherein said roasted coffee in said container is separated from said filter paper by a water-permeable parting layer through which said ground roasted coffee cannot pass.

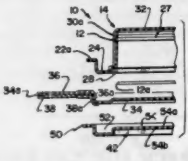
3,833,741
BAKERY PRODUCTS CONTAINING HEAT STABLE FOOD FILLINGS
Morris H. Katz, Minneapolis, and Jack R. Durst, Champlin, Minn., assignors to The Pillsbury Company, Minneapolis, Minn.
No Drawing. Filed Oct. 18, 1972, Ser. No. 298,733
Int. Cl. A21d *13/00;* **A23g** *3/00*
U.S. Cl. 426—94 **7 Claims**

A solid or semisolid flavored filling for bakery products which resists flow upon being heated is composed of a homogeneous external polar phase having a pH range of from about 3.2 to 5.4 and optionally an internal phase of minute fat globules in the amount ranging from about 5 to 75 parts by weight encapsulated within the external polar phase. The external phase contains about 100 parts by weight of water and from about 5 to 35 parts by weight of an edible protein to provide resistance to flow upon heating, an edible saccharide and a minor amount of flavoring. The edible protein is in the amount of from about 2 to 35% by weight and optionally gelatin or egg albumin each in amounts up to about 10 parts by weight.

3,833,742
FOOD PRODUCT PACKAGE
Thomas H. Wetmore, Ronald L. Davis, and Roland R. Vaughn, Fort Wayne, Ind., assignors to Peter Eckrich & Sons, Inc.
Continuation-in-part of abandoned application Ser. No. 793,465, Jan. 23, 1969. This application June 21, 1971, Ser. No. 154,733
Int. Cl. B65b *25/06*
U.S. Cl. 426—129 **14 Claims**

A package for stackable food products such as luncheon meat or the like including a shell having a food receiving and storage cavity and a peripheral bead, with an upraised handle on one portion of the bead; a sealing film across the cavity and releasably sealed to the shell periph-

eral bead with an extended portion of the film in the area of the handle; and a bottom panel having a peripheral



recess mating with shell peripheral bead and nestably receiving the same therein.

3,833,743

SOLUBILIZATION OF WATER AND AQUEOUS SOLUTIONS IN NON-AQUEOUS LIQUIDS

Lewis D. Morse, Princeton, Paul A. Hammes, Westfield, and Charles W. Everson, Warren, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Continuation of abandoned application Ser. No. 20,402, Mar. 17, 1970. This application Aug. 8, 1972, Ser. No. 279,131

Int. Cl. A23l *1/00, 1/26, 1/30*

U.S. Cl. 426—195 **4 Claims**

Micelles are formed by surfactants above their critical micelle concentration and this is used to solubilize water and aqueous solutions in oils and other non-aqueous liquids.

3,833,744

TEXTURIZING MATERIALS FOR FOODS

Ralph A. Bomstein, Hopkins, Minn., assignor to General Mills, Inc.

No Drawing. Filed Aug. 24, 1972, Ser. No. 283,615

Int. Cl. A22c *18/00*

U.S. Cl. 426—212 **14 Claims**

Chitosan is complexed with acidic polysaccharides to yield materials useful as texturizing agents for foods.

3,833,745

SWEETENING COMPOSITION

John Frank Lontz, 515 Eskridge Drive, Wilmington, Del. 19809, and Richard Titus D'Alonzo, 2511 Lovitt Drive, Memphis, Tenn. 38117

No Drawing. Filed June 1, 1971, Ser. No. 149,037

Int. Cl. A23l *1/26*

U.S. Cl. 426—217 **3 Claims**

A non-toxic, low calorie sweetening composition derived from a selective and critical balance of amino acids comprising a non-benzenoid base sweetener, a synergist with a benzenoid substituent and an intensifier with an amido configuration, collectively formulated with a polyhydric carrier.

3,833,746

PROCESS FOR TANNING EDIBLE COLLAGEN CASING

Mauj A. Cobly, Danville, Ill., assignor to Tee-Pak, Inc., Chicago, Ill.

No Drawing. Filed Jan. 8, 1973, Ser. No. 321,617

Int. Cl. A22c *13/00*

U.S. Cl. 426—277 **7 Claims**

An improved process for tanning an edible collagen meat casing comprises immersing a coagulated and washed collagen casing, substantially free of ammonium salts, in a first bath substantially saturated with an alkali metal salt of a strong acid, acidified to a pH less than about 3, containing an effective amount of an edible, non-toxic aldehyde, and then fixing the aldehyde in the casing on withdrawal of the casing from the first bath by immersing the casing in a second bath substantially saturated with an alkali metal salt of a strong acid and made alkaline to a pH of about 12 or higher.

3,833,747

PROCESS FOR REDUCING THE HYGROSCOPICITY OF DEHYDRATED FRUITS

James Cording, Jr., 420 Paoli Ave., Philadelphia, Pa. 19128, and Roderick K. Eskew, Box 205, Spring House, Pa. 19477

No Drawing. Continuation-in-part of application Ser. No. 66,082, Aug. 21, 1970, which is a continuation-in-part of application Ser. No. 662,193, Aug. 21, 1967, both now abandoned. This application Aug. 7, 1972, Ser. No. 278,661

Int. Cl. A23b *7/08, 7/10*

U.S. Cl. 426—289 **1 Claim**

Dehydrated fruit of reduced hygroscopicity is obtained by removing from fruit pieces, by osmotic transfer or partial expression of the juice, natural hygroscopic monosaccharides, replacing the monosaccharides in a second osmotic transfer with a sugar such as sucrose, and then processing to provide dehydrated fruit pieces of porous structure. In the process of this invention, fruit acids removed with the monosaccharides are replaced by drycoating the pieces after they are partially dried. Since the acid is put on the fruit and not into it, the acid has only very limited contact with the sugar and inversion does not occur, even after prolonged storage. Removing monosaccharides reduces or prevents caramelization during processing, improves rate of drying, and provides a markedly less hygroscopic porous dehydrated fruit product which is ideal as a snack type food.

3,833,748

METHOD FOR CONTINUOUSLY TREATING PARTICULATE MATERIAL

Takuzo Tsuchiya, Minneapolis, Minn., assignor to General Mills, Inc.

Filed Feb. 2, 1972, Ser. No. 222,751

Int. Cl. A23l *1/10, 1/18*

U.S. Cl. 426—447 **7 Claims**

A heat and pressure reactive particulate material such as cereal, protein material or cocoa is propelled through a treatment zone at a pressure at least 15 p.s.i.g. and a temperature at least 250° F. by a stream of hot pressurized gas. The residence time of the material in the zone is increased by flowing a second stream of gas in opposition to the first stream.

3,833,749

GRAIN TREATING OPERATIONS

Lloyd M. Triplett, Rte. 1, Claude, Tex. 79019

Original application Dec. 27, 1971, Ser. No. 212,131, now Patent No. 3,741,717, dated June 26, 1973. Divided and this application Jan. 22, 1973, Ser. No. 325,316

Int. Cl. A23l *1/18*

U.S. Cl. 426—450 **5 Claims**

An agitating and transport and heating process adjusted to a non-oxidizing flame provide inexpensive yet reliable and safe grain drying, using improved contact of the heating gases and the solid particulate material.

ELECTRICAL

3,833,750

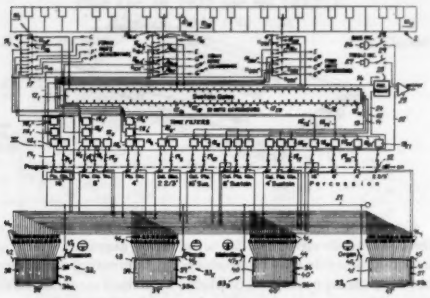
REED ACCORDION WITH PROGRAMMABLE ELECTRONIC ORGAN SOUND

Amedeo Iorio, Long Island City, N.Y., assignor to SYN Cordion Musical Instruments Corp., Long Island City, N.Y.

Filed Feb. 1, 1973, Ser. No. 328,531

Int. Cl. G10h *1/00*

U.S. Cl. 84—1.01 **8 Claims**



A reed accordion has a set of note generators each coupled to a respective key and is connected through a plurality of tone filters to an output. Each filter corresponds to a respective organ voice and is controlled by a respective tab which disconnects its filter from a bus (otherwise common to all filters) when actuated and thereby renders it operative. A plurality of registration program cards removably received in multicontact sockets on the instrument each carry a registration program network which is connectable through a respective registration switch to selected filters such that actuation of this switch will automatically cut in selected filters by disconnecting them from the bus. Each card bears two registrations in the form of conductors printed on its two faces so that simple scratching-through of a conductor programs that network for the respective organ voice, allowing the user to establish his own organ-voicing programs. A further switch, in one position, permits the accordion treble shifts to operate without preprogrammed organ-voicing and, in another position, provides programmed organ voicing for each treble shift.

3,833,751

GUITAR-LIKE INSTRUMENT WITH MAGNETIC PICKUP

Emmett H. Chapman, 8320 Yucca Trl., Los Angeles, Calif. 90046

Filed Feb. 22, 1973, Ser. No. 334,859

Int. Cl. G10g *3/08*; **G10h** *5/00*

U.S. Cl. 84—1.16 **3 Claims**

An electric guitar having a body of generally rectangular cross-section and consisting essentially of an elongated fretted wooden fingerboard, a headpiece extending upwardly therefrom, and a tailpiece extending downwardly therefrom. A set of tuned strings, preferably nine in number, extends in parallel relation immediately above and out of contact with the frets, in a plane substantially parallel to the fretted face of the fingerboard, the strings being anchored to the tailpiece and each string being attached to an individual tensioning member forming part of the headpiece. A magnetic pickup assembly is carried by the tailpiece, including an individual magnetic pickup in operative relation with each of the strings. The instrument is light in weight, and is supported by a bracket or hook engageable with the user's belt and by a strap around the user's neck and upper chest, the strap being attached to the instrument at or adjacent to the headpiece, whereby to maintain the instrument in correct playing position, upwardly more nearly vertically and across the user's torso, and freeing the user's hands from the need of supporting the instrument. The user is thereby enabled to execute unusual musical effects with the fingers of both hands engaging selected strings against selected frets of the fingerborad during play. In the preferred form of the invention having nine strings, the strings are uniquely tuned as follows: A first, highest pitched string; a second string tuned a perfect fourth interval below the first

string; a third string tuned a perfect fourth interval below the second string; a fourth string tuned a perfect fourth interval below the third string; a fifth string tuned a perfect fourth interval below the fourth string; a sixth, lowest bass string tuned a major seventh interval below the fifth string; a seventh string tuned a perfect fifth interval above the sixth string; an eighth string tuned a perfect fifth interval above the seventh string; and a ninth string tuned a perfect fifth interval above the eighth string. The first five strings constitute a melody group, and the remaining four strings constitute a bass and chord group.

3,833,752

ELECTRONIC MUSICAL INSTRUMENT WITH PLURAL CHANNELS PROVIDING DIFFERENT PHASE SHIFT

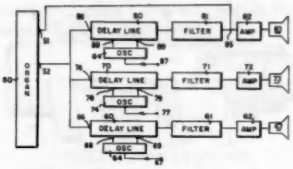
Tijmen van der Kooij, Bodegraven, Netherlands, assignor to N. V. Eminent, Bodegraven, Netherlands

Filed Feb. 26, 1973, Ser. No. 335,496

Claims priority, application Netherlands, Mar. 3, 1972, 722834

Int. Cl. G10h *1/04*

U.S. Cl. 84—1.24 **3 Claims**



The invention disclosed provides an electric musical instrument having an audio frequency signal source, an output from which the audio frequency signal passes to a plurality of paral-

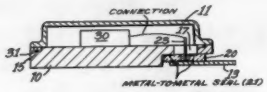
lel transmitting channels each of which comprises a delay line series circuit, a lowpass filter, an amplifier and loud speaker. Switching oscillators are disposed to provide 2 gate pulse trains, one running in opposite phase with regard the other, to the delay line series curcuit. Low frequency generators are disposed for generating a sine shaped sub-audio frequency signal to one of the switching oscillators while remaining units of the switching oscillators are connected to phase shifting networks. A second output from the audio frequency signal source connects to the amplifier of the last of the plurality of transmitting channels. The resultant combination of elements produces an ensemble effect.

3,833,753

HERMETICALLY SEALED MOUNTING STRUCTURE FOR MINIATURE ELECTRONIC CIRCUITRY

Vahan Garboushian, 3905 Mesa St., Torrance, Calif. 90505

Filed Nov. 30, 1972, Ser. No. 310,820
Int. Cl. H05k *5/00*
U.S. Cl. 174—525 **6 Claims**



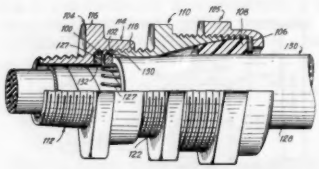
A mounting and hermetically sealing and encapsuling structure for miniature electronic circuit elements which are supported on ceramic carrier wafers or the like; a base element is used, made of a material of high thermal conductance to serve as heat sink and having an integral flat bar along one side, the flat bar has windows in which are mounted lead-in support members each constructed from a ceramic wafer element with peripheral metallization on one side and several metallized apertures with current leads therein, metallization islands surround the apertures on one side, and the metal leads in the apertures are respectively connected to the metallization islands. External leads on the other side of the wafer are cemented thereto as well as connected to the leads in the apertures, the external lead, the internal lead, the metallization lining and the island being in metallic contact including metallic sealing from one side of the wafer element to the other side. A cover is riveted to the end portions of the base element.

3,833,754

GROUNDING CONNECTOR FOR STRAND CABLE ASSEMBLY

Robert A. Philibert, Long Island, N.Y., assignor to General Signal Corporation, Rochester, N.Y.

Filed Apr. 23, 1973, Ser. No. 353,289
Int. Cl. H02g *15/00*
U.S. Cl. 174—65 SS **5 Claims**



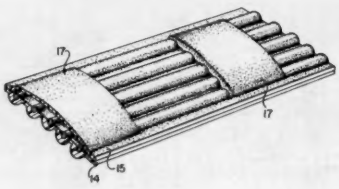
A cable grounding connector is disclosed which is adapted to be used with cable type SNM (Shielded Non-Metallic-Sheathed). The cable connector arrangement fulfills the "pull-out" and equipment grounding conductor continuity requirements of the National Electrical Code. An adapter or connector body fits over the hub provided at one end of the intermediate body, or fitting, for the connector. This insures that a pair of flat plates or washers, which abut the hub, are effective to firmly clamp the strands of the grounding conductors.

3,833,755

EASILY STRIPPABLE RIBBON CABLES

R. Keith Soelberg, Flagstaff, Ariz., assignor to W. L. Gore & Associates, Inc., Newark, Del.

Filed Aug. 16, 1973, Ser. No. 388,798
Int. Cl. H01b *7/08*
U.S. Cl. 174—117 F **16 Claims**



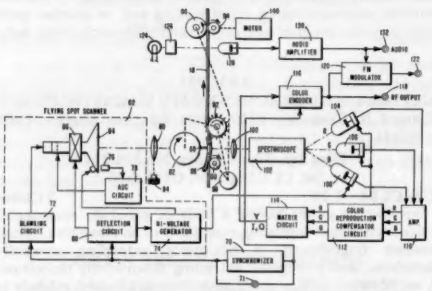
Continuous lengths of flat electrical cable have segments of the cable easily strippable for termination purposes. Flat multiconductor cable may be produced by laminating conductors between sheets or ribbons of plastic insulation material. Easily strippable segments of such a cable may be made by interrupting the laminations in the insulating sheets at periodic intervals. The insulating material which has not been laminated may subsequently be cut transversely just prior to end-use application, and pulled away from all conductors simultaneously, thereby exposing all conductors for termination.

3,833,756

COLOR TELEVISION SIGNAL GENERATOR

Mituru Kumagai, Kawasaki; Takeshi Sasaoka, and Yoshiaki Nakayama, both of Tokyo, all of Japan, assignors to Fuji Shashin Film Kabushiki Kaisha and Ikegami Tsushinki Co., Ltd., both of Kanagawa-ken, Japan

Filed Aug. 9, 1972, Ser. No. 279,231
Claims priority, application Japan, Aug. 9, 1971, 46-60439
Int. Cl. H04n *9/02*
U.S. Cl. 178—5.4 R **16 Claims**



Disclosed is a color television signal generator which is capable of producing color television signals directly from an 8 mm-width color film to reproduce the colored images of the film on a home-use color television. The present generator uses a polygonal prism which is rotated in synchronous relation with the feeding of the film, thus assuring that the raster on the flying-spot scanner is in register with the frame of the film, no matter what the feeding speed of the film is. Also, the present generator includes a color reproduction compensator

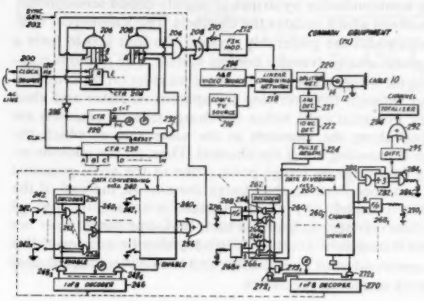
which functions to subtract green and blue contents from the red component color, thus reproducing the color image of the film on the home-use color television with high fidelity of color.

3,833,757

ELECTRONIC BILATERAL COMMUNICATION SYSTEM FOR COMMERCIAL AND SUPPLEMENTARY VIDEO AND DIGITAL SIGNALING

Donald Kirk, Jr., and Michael J. Paolini, both of St. Petersburg, Fla., assignors to Computer Television Inc., New York, N.Y.

Filed Apr. 10, 1972, Ser. No. 242,721
Int. Cl. H04n *1/44, 7/18*
U.S. Cl. 178—5.6 **18 Claims**



A bilateral cable communications system — as for a lodging facility, distributes commercial and supplementary video programs from common equipment to spaced subscriber stations located, for example, in each hotel-motel room. Heterodyne converter apparatus is included at each station for viewing the supplementary programing on a standard television receiver.

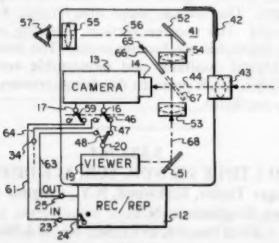
Time division multiplexed, full duplex digital communications are also effected via the distribution cable for providing signaling between the common equipment and the subscriber locations. The digital signaling implements administrative and supervisory control for supplementary video reception and monitoring — as for extra fee accounting purposes, and also general lodging service tasks.

3,833,758

VIDEO INFORMATION RECORDING AND DISPLAY

Leonard A. Ferrari, San Clemente, Calif., assignor to Bell & Howell Company, Chicago, Ill.

Filed July 7, 1972, Ser. No. 269,644
Int. Cl. H04n *5/78, 7/18*
U.S. Cl. 178—6.8 **26 Claims**



Several video recording and playback methods and apparatus are disclosed in which played-back video information is displayed to a video camera which, in turn, produces electrical video signals for display by a video display set, such as a conventional television receiver. The video camera may operate at different scanning rates during recording and during playback. The device that displays the played-back video information to the camera may operate at a scanning rate different from the camera's scanning rate during playback. Also, the device for displaying the played-back video information to the camera may be synchronized by played-back synchronization information which is affected by timing errors. No automatic frequency control is then employed in the particular display device.

3,833,759

ELECTRONIC SYSTEM FOR DISPLAYING ARTIFICALLY PRODUCED ENVIRONMENT PATTERNS

Teruo Yatabe, and Shuntetsu Matsumoto, both of Tokyo, Japan, assignors to Agency of Industrial Science and Technology, Tokyo, Japan

Filed July 24, 1972, Ser. No. 274,254
Claims priority, application Japan, July 22, 1971, 46-60718; July 22, 1971, 46-60719; Nov. 22, 1971, 46-93879
Int. Cl. G09b *9/04;* **H04n** *7/18*
U.S. Cl. 178—6.8 **9 Claims**

The display system of the present invention produces simplified environment patterns and these simplified patterns are projected on a screen which is assumed to be located a certain distance to the front of the moving body by converting the *x-y* coordinate of the projected patterns to voltage values, applying these voltage values to an analog electronic circuit constructed in accordance with the equations of the patterns, converting the output electric signals of the analog electronic circuit to electric signals having widths corresponding to the spatial regions, controlling respective color signal generators in proportion to the time widths so that the color signal generators generate color signals corresponding to the color distribution of the environment patterns and producing the environment patterns on a color TV monitor screen by feeding the color signals to the color TV monitor.

3,833,760

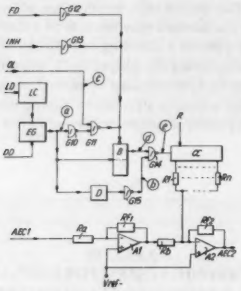
TELEVISION SYSTEMS

John Edward Tickle, Heald Green, England, assignor to Ferranti Limited, Hollinwood, England

Filed Feb. 27, 1973, Ser. No. 336,374
Int. Cl. H04n *5/22*
U.S. Cl. 178—6.8 **5 Claims**

A television system for producing overlay effects by replacing part of a background image by an overlay image includes a

detector operable to detect the presence or absence of the overlay image during a predetermined scan line. The detector



output is connected to control means operable to move the overlay image vertically to the desired position.

3,833,761

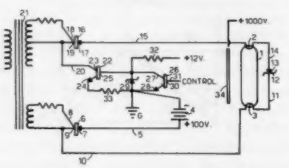
FLUORESCENT LAMP SYSTEM FOR FACSIMILE

Deward J. Houck, Mastic Beach, N.Y., assignor to International Scanatron Systems Corp., Central Islip, N.Y.

Filed July 12, 1971, Ser. No. 161,685

Int. Cl. H04n *1/24*

U.S. Cl. 178—7.1 **5 Claims**



A fluorescent lamp for facsimile copy scanning is provided with regulated constant current for constant illumination; all solid state starter circuitry; and automatic current direction reversal once for each scanning line to prevent uneven darkening due to prolonged DC passing through the lamp in one direction.

3,833,762

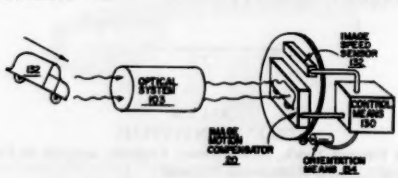
SOLID STATE INTEGRATING, IMAGE MOTION COMPENSATING IMAGER

Richard A. Gudmundsen, Santa Ana, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed June 4, 1973, Ser. No. 366,828

Int. Cl. H04n *5/30*

U.S. Cl. 178—7.1 **24 Claims**



An integrating image motion compensator is disclosed. The compensator comprises photo-responsive charge transfer means, overlying transparent insulation means and transparent charge transfer electrode means spaced from the charge transfer means by the insulation means. Channel isolation means associated with the charge transfer means define individual charge transfer channels. The operating system further comprises means for inducing separate charge collection regions within each channel and for transferring the regions along the charge transfer means at a controllable rate. Image speed sensing means sense the image speed and synchronize the rate of charge transfer with the rate of image movement. When large area image motion compensators are needed, optical image segmentation means are provided to allow the use of many small compensators to form a composite, large, image motion compensator. In the preferred embodiment the photo-responsive charge transfer means is a semiconductor layer having a gap energy less than the energy of the photons forming the image to be converted. A plurality of parallel charge transfer channels are defined at the surface of the semiconductor by stripes of heavily doped semiconductor material which isolates the channels. The transparent control electrodes are preferably divided into four sets to form a four-phase charge transfer control system. The photons comprising the image to be converted are incident on the semiconductor through the overlying transparent insulator and electrodes. Potential wells within the charge transfer channels are stepped along the channels at the same rate at which the image is traveling along the channel. Thus, all the photons arriving from a given image point strike in the same potential well and contribute to the charge therein. At the end of the transfer channel, any charge therein is sensed in any appropriate manner, such as by a back-biased pn junction.

Non-transparent control electrodes may be employed if a thin semiconductor chip is used, and the light is focused onto the back surface of the device.

3,833,763

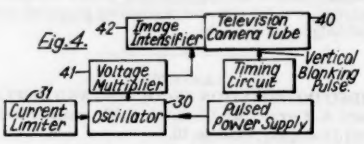
PULSED OSCILLATOR FOR LOW LIGHT LEVEL TELEVISION SYSTEM

Melvin Murray Ramsay, Broxbourne, and Anthony Ian McLennan, Harlow, both of England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Feb. 22, 1973, Ser. No. 334,820

Int. Cl. H04n *5/38*

U.S. Cl. 178—7.2 **4 Claims**



A low light level television system employs an image intensifier tube coupled to a camera tube. An oscillator supplying a high voltage multiplier for the image intensifier is triggered by a pulse that occurs before the vertical blanking pulse of the camera tube. This avoids video interference from the R.F. power supply. The shorter vertical blanking period occurs during the oscillator conducting period. The timing circuit includes a crystal oscillator and monostable voltage dividers which supply a clock pulse to the drive circuitry for the voltage supply oscillator.

3,833,764

MULTIPLE VIEWING SURFACE DISPLAY

Arthur Roger Taylor, Kirkwood, N.Y., assignor to The Singer Company, Binghamton, N.Y.

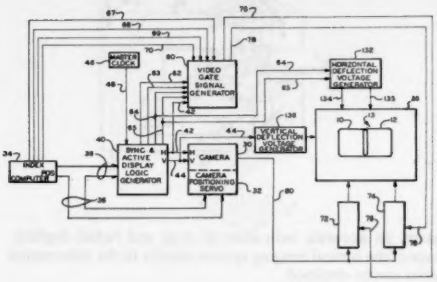
Filed Dec. 14, 1972, Ser. No. 314,966

Int. Cl. H04n *5/68*

U.S. Cl. 178—7.5 D **3 Claims**

The faces of a pair of cathode ray tubes are optically combined to provide a viewing surface. The beam of each cathode

ray tube traces a display raster, the lines thereof being optically combined to overlap and the modulation of a video signal being selectively gated therewith to vary the intensity of the beams, thereby providing a modulated composite raster



for producing a desired scene having a desired deployment on the viewing surface. The composite raster appears to an observer as being traced by a single beam which has an intensity in accordance with the video signal.

3,833,765

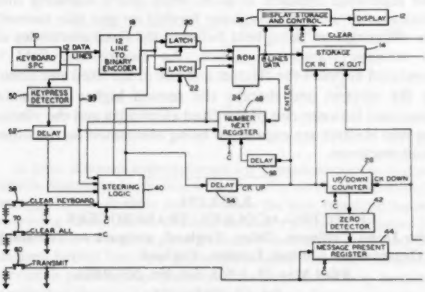
KEYBOARD AND MESSAGE SYSTEM

Edwin H. Hilborn, Framingham; Joseph D. Brabel, Concord, and Kenneth J. Bray, Medway, all of Mass., assignors to The United States of America as represented by the Secretary of the Department of Transportation, Washington, D.C.

Filed Jan. 30, 1973, Ser. No. 327,953

Int. Cl. G08b *1/00;* **H04b** *1/00;* **H04l** *15/02*

U.S. Cl. 178—79 **21 Claims**



A keyboard entry digital data transmission and reception system employing a one-handed keyboard is disclosed. The novel keyboard arrangement and the logic circuitry associated therewith permits single data characters to be rapidly entered by a plurality of sequential key depressions which uniquely define each character.

3,833,766

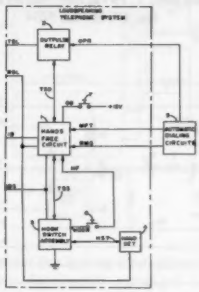
VOICED CONTROLLED GAIN SWITCHED LOUD-SPEAKING TELEPHONE SYSTEM

Anders A. Eklof, Fayetteville, and Ronald Binks, Chambersburg, both of Pa., assignors to Global Systems Design Corporation, Chambersburg, Pa.

Filed Oct. 18, 1972, Ser. No. 298,513

Int. Cl. H04m *1/00*

U.S. Cl. 179—1 HF **8 Claims**



A loud-speaking telephone system having voice controlled gain switched transmit and receive channel amplifiers, voice controlled gain switched amplifier gain control circuits, a two to four wire hydrid bridge with telephone line loop d.c. current bypass circuit and a telephone line impedance balancing network. The loud-speaking telephone system has provisions for permitting alternative conventional handset usage and it may be integrated with an automatic telephone dialing system.

3,833,767

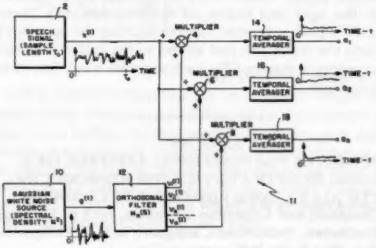
SPEECH COMPRESSION SYSTEM

Alfred A. Wolf, RFD 3, Box 327, Annapolis, Md. 21403

Continuation-in-part of Ser. No. 191,003, Oct. 20, 1971, which is a continuation-in-part of Ser. No. 155,988, June 23, 1971. This application Dec. 8, 1972, Ser. No. 313,239

Int. Cl. H04b *1/66*

U.S. Cl. 179—15.55 R **10 Claims**



The generation of a set of a certain kind of coefficients related to the speech signal is obtained by simultaneously operating upon a sample of the speech signal with a set of orthogonal random functions derived from a white noise source and the white noise itself. These coefficients are sequentially AM or FM modulated for transmission by any suitable means. The transmitted signal is received and demodulated and sequentially processed through the system of this invention to recover the coefficients which are related to and can be used with a second source of white noise to

reconstruct the original speech signal. The speech compression is accomplished by utilizing the coefficients as the information carrier source and later at the receiving ends to reconstruct the speech signal from these coefficients to obtain the vocal intelligence.

3,833,768

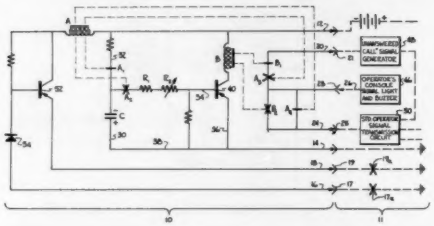
PBX AUTOMATIC OPERATOR RECALL ACCESSORY

Gene E. Scott, 5445 S.W. Watson, Beaverton, Oreg. 97005

Filed Dec. 1, 1972, Ser. No. 311,366

Int. Cl. H04m *5/04*

U.S. Cl. 179—42 **10 Claims**



An automatic operator recall accessory adaptable for attaching to the trunk circuitry of private branch telephone exchange switchboards. The accessory comprises a time-delay switching circuit on a printed circuit board adaptable to be interposed between the operator's console light and buzzer and the standard PBX switchboard circuit which normally selects and transmits signals to the light and buzzer. When the operator extends a trunk call by connecting it to an idle extension, placing the call on hold, or "camping on" the call to a busy extension, the recall circuit begins a time delay period during which the operator's light and buzzer are permitted to receive signals from the standard switching signal transmission circuit. If, however, after a predetermined period of time dependent upon the adjustment of the accessory's time delay circuit the caller has been unable to complete his call, the recall circuit automatically disconnects the operator's light and buzzer from the standard signal transmission circuit and simultaneously connects the light and buzzer to the switchboard's "unanswered call" signal generator, thereby alerting the operator to switch onto the trunk line and attend to the caller. One such recall accessory is required for each separate trunk line of the switchboard unit.

3,833,769

APPARATUS FOR POSITIONAL CONTROL OF A READING HEAD IN A DEVICE FOR REPRODUCING OPTICALLY CODED VIDEO DISK RECORDINGS

Klaas Compaan, and Gijsbertus Bouwhuis, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

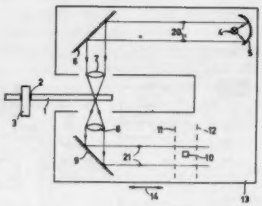
Filed Feb. 25, 1972, Ser. No. 229,291

Claims priority, application Netherlands, Mar. 11, 1971, 7103234

Int. Cl. G11b *7/12, 7/16, 7/24*

U.S. Cl. 179—100.3 V **15 Claims**

An apparatus is described for reading, by means of a beam of radiation, a disk-shaped information carrier which contains spirally arranged video and/or audio signals coded in optical form, which apparatus comprises a source of radiation and a radiationsensitive signal detector cell, the information carrier being disposed in the radiation path between this source and this detector cell. By providing at least one grating, consisting of radiation-transmitting and radiation-absorbing stripes and on which an image of part of the grating-shaped structure of the information track in the vicinity of the portion of this track to be read may be formed, and a radiation-sensitive detection



system, an accurate indication of axial and radial displacements of the optical imaging system relative to the information carrier can be obtained.

3,833,770

ELECTROSTATIC ACOUSTIC TRANSDUCER

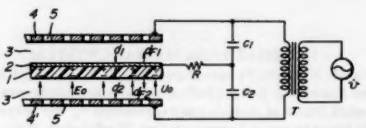
Nobuhisa Atoji, Shijonawato, and Takahisa Aoi, Moriguchi, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 29, 1972, Ser. No. 230,435

Claims priority, application Japan, Mar. 11, 1971, 46-13828

Int. Cl. H04r *19/00*

U.S. Cl. 179—111 E **5 Claims**



A high-fidelity electrostatic acoustic transducer comprising a pair of fixed electrodes with a multiplicity of small openings and supported opposite to each other and a vibrating film electret with a conductive layer formed on one side thereof, the vibrating film being held between the fixed electrodes as an acoustic transducer section. An electrostatic field is generated between the electret and one of the fixed electrodes by the electret and thereby the second higher harmonics generated between one of the fixed electrodes and the vibrating film electret are capable of being eliminated on the other fixed electrode.

3,833,771

ELECTRO-ACOUSTIC TRANSDUCERS

John Dunn Collinson, Otley, England, assignor to The Rank Organisation Limited, London, England

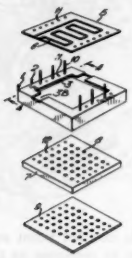
Filed May 29, 1973, Ser. No. 364,486

Int. Cl. H04r *9/04*

U.S. Cl. 179—115.5 PV **12 Claims**

A transducer assembly for a flat diaphragm transducer of the type having a non-magnetic diaphragm with a conductor in the form of spaced parallel strips on one face with a cooperating magnet structure comprising a plurality of elongate alternate magnetic poles, which can be readily assembled by unskilled labour is disclosed. The transducer assembly comprises two polygonal frames having inwardly directed flanges and peripheral upstanding flanges. The inwardly directed flanges serve to define the spacing between the mag-

net structure and the diaphragm when two such frames are assembled with the diaphragm therebetween and the magnet structures located by the upstanding peripheral flanges of the frame members which flanges project away from one another.



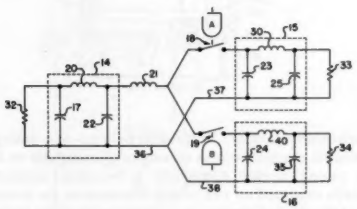
The two frame members are clamped along at least two sides in correspondence with the inwardly directed flanges, and the clamping means also holds the magnet structures and a perforated backing plate onto the frame members.

3,833,772

TIME DIVISION RESONANT TRANSFER HYBRID CIRCUIT AND METHOD

Lawrence E. Getgen, Redwood City, Calif., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Apr. 9, 1973, Ser. No. 349,572
Int. Cl. H04b *1/58*
U.S. Cl. 179—170 NC **11 Claims**



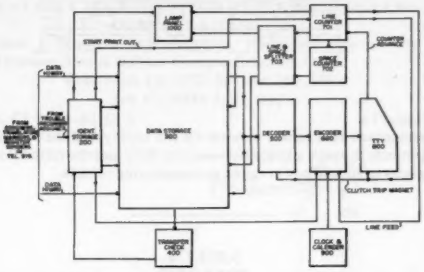
A time division hybrid circuit for communications systems which functions by means of a plurality of resonant transfer energy storage devices connected to the line, transmitting and receiving terminals of the system and a plurality of gates for periodically connecting the devices in a manner achieving the desired hybrid function. More specifically, the line connected device is periodically connected to the transmitting terminal connected device at a sampling frequency of at least two times the highest message frequency of interest (Nyquist theorem) to establish periodic conducting periods effecting resonant transfer of energy from the line device to the transmitting device; and the receiving terminal connected device is connected to the line connected device at the same sampling frequency for establishing second conducting periods effecting resonant transfer of energy with each of the second conducting periods closely following each first named conducting period and within the sampling interval.

3,833,773

TELEPHONE SYSTEM TROUBLE RECORDER

John G. Johnson, Elmhurst, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Aug. 28, 1972, Ser. No. 284,030
Int. Cl. H04m *3/24*
U.S. Cl. 179—175.2 R **6 Claims**



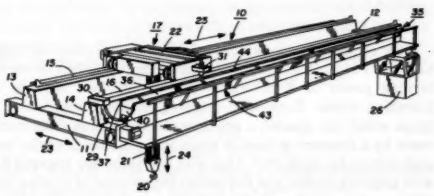
A trouble recorder for use in a telephone system. Internal storage is provided for trouble messages received from the telephone system. A plurality of input data highways are provided with facilities for connecting the highway to alternate storage devices if the normally connected storage devices are in use.

3,833,774

CABLE SUPPORT FOR OVERHEAD CRANE TROLLEYS

Robert George Mills, Galt, Ontario, Canada, assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Sept. 19, 1972, Ser. No. 290,282
Int. Cl. H02g *11/00*
U.S. Cl. 191—12 R **7 Claims**



Cable support apparatus for an extensive length of power supply cable connecting an electrical power source to an overhead crane trolley. An elongated, open V-trough is defined extending longitudinally juxtaposed to a cross girder of the trolley bridge. Electrical power cable extending from a power source at the bridge end truck to the trolley, is received and contained in the trough from which it is dragged by the trolley over its traversing course on the bridge.

3,833,775

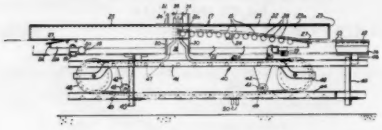
UNDERFLOOR POWER SUPPLY SYSTEM FOR A VEHICLE

Adolf E. Lodder, Montreal, Quebec, Canada, assignor to Dominion Bridge Company Limited, Montreal, Quebec, Canada

Filed Aug. 7, 1972, Ser. No. 278,210
Claims priority, application Canada, July 5, 1972, 146425
Int. Cl. H02g *11/00*
U.S. Cl. 191—12 R **11 Claims**

A trench in a floor parallels the path of movement of a vehicle along the floor, the trench being covered by a series of

floor plates. A trolley moves alongside of the vehicle on rails in the trench and a hump on the trolley successively raises the floor plates above floor level. A power supply in the trench is



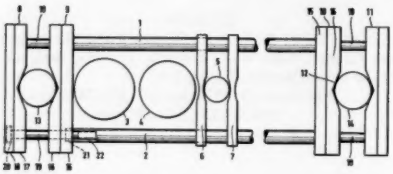
connected to a power conduit on the trolley and the conduit projects through a space between the floor and the raised floor plates to supply power to the accompanying vehicle.

3,833,776

WIRE GRIP

Manfred Wampfler, D-7859 Markt, and Werner Krugel, Haltingen, both of Germany, assignors to said Wampfler, by said Krugel

Filed Feb. 1, 1973, Ser. No. 328,576
Claims priority, application Germany, Feb. 1, 1972, 2204591
Int. Cl. B60l *5/36*
U.S. Cl. 191—57 **12 Claims**



Wire gripping means which may be used at a cable carriage such as is used in guiding and supporting a plurality of wires feeding power to a moveable electric machine such as a travelling crane. Each wire gripping means comprises two strips which are spaced a predetermined position from each other by a distance at least as great as the diameter of the largest wire to be supported. One wire is clampingly engaged by wire gripping means, and this serves the purpose of moving the cable carriages either closer or further apart from each other. Additional wires are held loosely between the strips so that they can shift their position relative to each other along the direction of their axes. This arrangement ensures that the wire loops which are formed between carriages can be freely formed dependent upon the stiffness of the wires and their diameters in contrast with prior art gripping means which tightly clamps the various wires so that the different wires form different curves and have a tendency to bend in diverse ways.

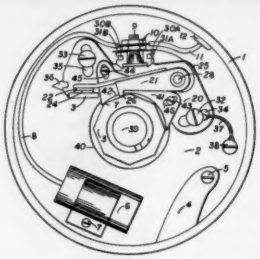
3,833,777

PRE-GAPPED BREAKER POINT ASSEMBLIES

William E. Clark, P.O. Box 702, Pinedale, Wyo. 82941

Filed Apr. 30, 1973, Ser. No. 356,062
Int. Cl. H01h *19/62*
U.S. Cl. 200—31 **4 Claims**

A pre-gapped breaker point assembly for use with distributors of internal combustion engines including a contact arm, with a cam follower and breaker contact points, adapted for reciprocatory movement in consonance with the cam follower, and a novel spacing block, adapted to make contact with the distributor cam lobes, thereby establishing the



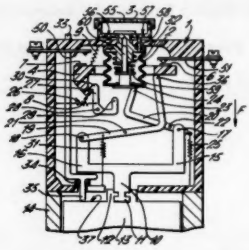
distance the movable contact point separates from the stationary contact point in response to the rotating cam lobes moving the cam follower.

3,833,778

BELLOWS-TYPE TIME DELAY DEVICE FOR RETARDED SWITCH

Georges Andre Faffari, Nanterre, France, assignor to La Telemecanique Electrique, Nanterre, France

Filed Dec. 7, 1972, Ser. No. 313,104
Claims priority, application France, Dec. 8, 1971, 71.44021
Int. Cl. H01h *7/03, 43/00*
U.S. Cl. 200—33 R **4 Claims**



Particularly compact, removable bellows-type timing device for electric contacts whose closing or opening can be delayed. This timing device comprises a movable contact-holder pivotally mounted on two pivots disposed on the internal surface of the shell of the device, on either side of the bellows, the shape of the holder, ring or fork, being such that it surrounds at least partially the bellows when the latter is in expanded configuration: as a result, the dimension of the device, parallel to the direction of displacement of ghe bellows, is reduced.

The device further comprises a flexibly mounted mechanical coupling component which enables dove-tail coupling with the mobile unit of an eventual relay.

3,833,779

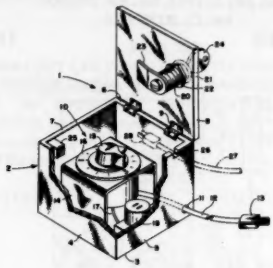
TELEVISION TIMER TO REGULATE TELEVISION VIEWING TIME

Louis A. Leone, 12809 Chippewa Rd., Brecksville, Ohio 44141

Filed May 18, 1973, Ser. No. 361,450
Int. Cl. H01h *7/08*
U.S. Cl. 200—33 R **10 Claims**

A timer and electrical receptacle controlled thereby are positioned within a container having a top which can be locked in a closed position to prevent access to the interior of the container. An electrical cord extends through an opening

in the container and is adapted for connection to a source of electrical energy to provide power to the electrical receptacle as controlled by the timer, and a notch formed in one of the



walls of the container is adapted for receipt of the power cord from an electrical appliance for connection in the electrical receptacle, the notch and the movable top of the container cooperating to prevent removal of the power cord.

3,833,780

DRAW OUT TYPE ELECTRICAL SWITCHGEAR WITH IMPROVED MOVABLE CONTACT ASSEMBLY MOUNTING MEANS

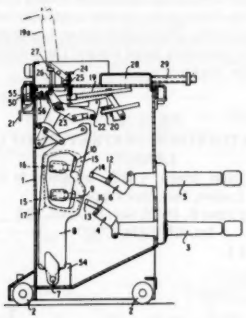
George Caton, Ilkley, England, assignor to Yorkshire Switchgear and Engineering Co., Limited, Yorkshire, England

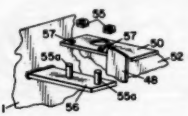
Filed Mar. 12, 1973, Ser. No. 340,303

Claims priority, application Great Britain, Mar. 16, 1972, 12483/72

Int. Cl. H01h *9/00*; **H02b** *1/10*

U.S. Cl. 200—50 AA **8 Claims**





An oil-immersed circuit breaker comprising one or more pairs of arcuate fixed contacts, an equivalent number of arcuate bridging contacts insulated from and supported on a carrier structure, means mounting the carrier structure for pivotal movement about an axis remote from the fixed contacts and coaxial with the arcuate contacts, and operating means for moving the carrier structure pivotally to effect engagement and disengagement of the bridging contacts with the fixed contacts. The removable mounting means consists of an apertured plate on the movable bridging contact assembly which coincides with structure plate with studs. Nuts are threaded onto the studs to hold the movable bridging contact assembly in fixed relationship to the framework structure.

3,833,781

SEAT BELT BUCKLE SWITCH WITH KNIFE AND CLIP CONTACT ASSEMBLY

Robert J. Rumpf, Grosse Pointe, Mich., assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Sept. 10, 1973, Ser. No. 395,745

Int. Cl. H01h *3/20*, *1/42*

U.S. Cl. 200—61.58 B **4 Claims**

A switch for safety buckles which is concealed from external tampering and view by location in the channel frame of the buckle and which is sensitive to the closure of the latch element on the tongue element. The switch comprises a blade and receiver, the blade being responsive to the latch position and by substitution of the receiver element the switch is convertible from normally open to normally closed. A harness jacket houses the electrical leads and the switch elements, projecting the switch elements into the channel frame housing. An actuating leaf projects from beneath the latch element and grips the blade of the switch. A cocking element or lever engageable by the tongue on insertion in the buckle is provided and is movable on closure of the latch urged by the latch spring and selectively opening or closing the switch.

3,833,782

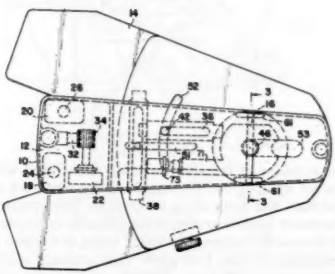
FOOT PEDAL SWITCH

Roger P. Bartel, North Tonawanda, N.Y., assignor to Raymond Lee Organization, New York, N.Y., a part interest

Filed Aug. 15, 1973, Ser. No. 388,606

Int. Cl. H01h *13/16*

U.S. Cl. 200—86.5 **4 Claims**



A foot pedal switch that can independently turn three switches on or off and can independently vary the settings of three potentiometers. As such, the foot pedal switch is readily

applicable to the adjustment of a musical instrument amplifier, with the switches and potentiometers activating modular effect circuits. Each switch and potentiometer can be controlled with a foot pedal independently of the other switches and potentiometers.

3,833,783

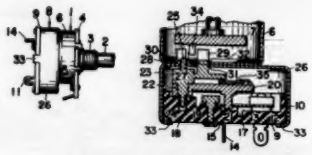
ROTARY SWITCH WITH SPRING LOADED CAM MEANS

Heiroku Tanaka, and Katsuyoshi Onda, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 195,438, Nov. 3, 1971, abandoned. This application Aug. 6, 1973, Ser. No. 385,677

Int. Cl. H01h *3/42*

U.S. Cl. 200—153 L **12 Claims**



A single-pole single-throw, single-pole double-throw, double-pole single-throw or double-pole double-throw switch used primarily with a variable resistor, in which not only accurate operations are secured but also the lowering of a dielectric strength, due to an arc or abrasive dust or soot, is prevented in cutting off a circuit which develops an especially high surge current.

3,833,784

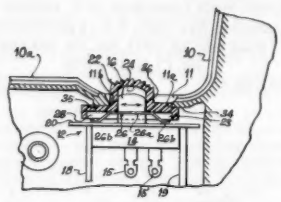
SAFETY SLIDE SWITCH

David J. Bobel, Buffalo Grove, and Robert F. Lotter, Mundelein, both of Ill., assignors to Skil Corporation, Chicago, Ill.

Filed Dec. 29, 1972, Ser. No. 319,920

Int. Cl. H01h *3/20, 9/06*

U.S. Cl. 200—157 **3 Claims**



The actuator of the slide switch is associated with contact means for opening and closing the same when the actuator is moved back and forth along a first path. The actuator includes an abutment surface arranged for abutting engagement with a fixed abutment surface, the latter being contained in a plane perpendicular to the first path. The actuator is mounted by support means including yieldable means permitting movement of the actuator back and forth along a path contained in said plane thereby to disengage the abutment surfaces for thereafter permitting movement of the actuator along the first path.

3,833,785

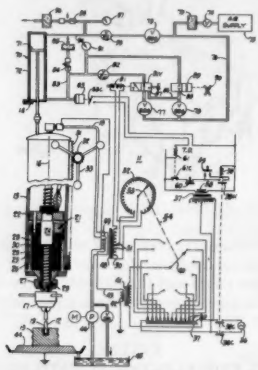
ELECTRODE MOVEMENT CONTROL

Jere H. Roach, Rocky River, Ohio, assignor to Cammann Manufacturing Company, Cleveland, Ohio

Filed July 2, 1973, Ser. No. 375,800

Int. Cl. B23k *9/16*

U.S. Cl. 219—69 G **12 Claims**



An electrode movement control is disclosed for an electric arc disintegrator to disintegrate an aperture into a workpiece. The electrode is held in a chuck in an electrode head which can move along an axis to move the electrode toward or away from the workpiece. Current supply means supplies current for an electric arc to disintegrate particles from the workpiece. A vibrator moves the head in a vibratory movement primarily toward the workpiece, and a fluid motor such as an air pressure cylinder and piston is connected to move the electrode head away from the workpiece whenever a current sensing transformer senses arc current in excess of a predetermined amount. The fluid motor is also controlled normally to balance the weight of the electrode head and optionally can be made to move the electrode head toward the workpiece if the head is beneath the workpiece.

3,833,786

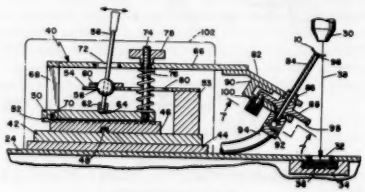
LASER APPARATUS FOR FENESTRATION OF CONTACT LENSES

Donald Brucker, San Diego, Calif., assignor to Continuous Curve Contact Lenses, Inc., San Diego, Calif.

Filed June 8, 1973, Ser. No. 368,193

Int. Cl. B23k *27/00*

U.S. Cl. 219—121 L **5 Claims**



Laser apparatus for fenestration of contact lenses by forming consistently precise perforations being normal to the adjacent surfaces of the lens and with the inside diameter of the perforations being larger than the outside diameter; and having smooth and effectively polished surfaces. A lens is held by vacuum on a positioning mechanism, which is magnetically held on a base for coarse positioning, and incorporates two-

axis stick controlled adjustment means for precise positioning of the lens relative to the laser beam. The lens support has indexing means for rotating the lens to a predetermined number of positions to space the perforations evenly adjacent the periphery of the lens.

3,833,787

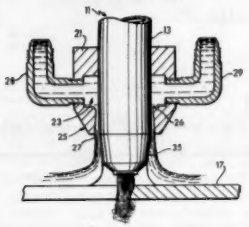
PLASMA JET CUTTING TORCH HAVING REDUCED NOISE GENERATING CHARACTERISTICS

Richard W. Couch, Jr., Hanover, N.H., assignor to Hypotherm, Incorporated, Hanover, N.H.

Continuation of Ser. No. 262,091, June 12, 1972, abandoned. This application Oct. 15, 1973, Ser. No. 406,333

Int. Cl. B23k *9/00*

U.S. Cl. 219—121 P **3 Claims**



In the plasma jet cutting torch construction disclosed herein, a low velocity annular water sheath is provided around the plasma jet to absorb and dampen acoustic energy generated by the jet. This sheath forms an essentially continuous shield around the jet between the torch and the workpiece.

3,833,788

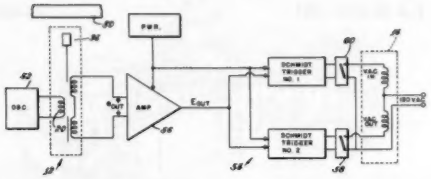
WELD HEAD POSITION CONTROL SYSTEM

Hubert Thomas Hovance, Revenna, and Michael Joseph Tobin, Medina, both of Ohio, assignors to Miller Electric Mfg., Co., Appleton, Wis.

Filed Aug. 16, 1972, Ser. No. 280,989

Int. Cl. B23k *9/12*

U.S. Cl. 219—124 **7 Claims**



A control system adapted to guide a weld head in a welding position along a seam configuration by positioning a probe, which is attached to the weld head, in a closely spaced floating relation to the weld seam. The probe and associated weld head are mounted on a motorized slide. The probe provides a signal having a magnitude inversely proportional to the distance from the weld seam, and this signal is used to energize the motorized slide in either the forward or reverse directions to maintain the probe within a predetermined range away from the seam.

3,833,789

THERMAL PRINTING HEAD

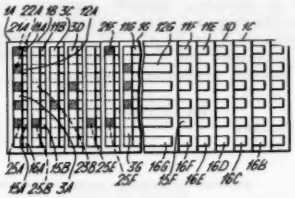
Hideo Taniguchi, Kyoto, Japan, assignor to Toyo Electronics Industry Corp., Ukyo-ku, Kyoto, Japan

Filed Mar. 8, 1973, Ser. No. 339,432

Claims priority, application Japan, Mar. 16, 1972, 47-4726795

Int. Cl. H05b *1/00*

U.S. Cl. 219—216 **18 Claims**



A thermal printing head comprising a plurality of thin insulating layers each being provided on one surface thereof with a plurality of lower slips made of an electrically conductive material arranged in spaced parallel relation to one another. The insulating layers are piled stepwise one upon another so that one end portion of the upper surface of each of the layers with the corresponding end portions of the conductive slips thereon are exposed from beneath the end of the layer immediately above. A square element made of an electrically resistive material is placed on each of the exposed end portions of the lower conductive slips. An upper slip made of an electrically conductive material extending transversely of the exposed ends of the lower conductive slips on each of the insulating layers covers the resistive elements so that the elements are sandwiched between the upper and lower conductive slips. Upon impression of a voltage between the upper and lower conductive slips, the resistive elements sandwiched therebetween are heated. By selecting the lower conductive slips between which and the upper conductive slip a voltage is to be impressed it is possible to heat those of the resistive elements which are combined to take the shape of a symbol, and with a sheet of heat-sensitive paper being applied onto the surface of the printing head, the symbol is printed on the paper.

3,833,790

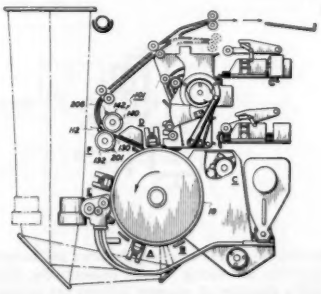
HEATED PRESSURE FUSING SYSTEM

Donald J. Quant, Rochester, and Edward C. Braband, Penfield, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed July 5, 1973, Ser. No. 376,770

Int. Cl. H05b *1/00*

U.S. Cl. 219—216 **4 Claims**



An improved control for maintaining a substantially constant temperature at the contact arc or nip defined by pressure

heated fusing rolls. A sensing device senses the surface temperature of each of the rools and supplies signals to a control circuit which combines the signals in a parallel resistance network. An output signal is supplied to electrical heating elements associated with at least one of the rolls to maintain a constant temperature at the nip.

3,833,791

RESISTANCE TYPE FLUID HEATING APPARATUS

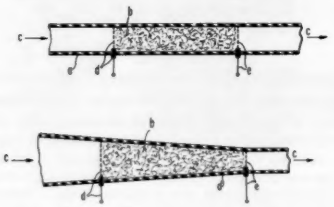
Hermann J. Schladitz, Munich, Germany, assignor to Schladitz-Whiskers A.G., Zug, Switzerland

Continuation of Ser. No. 474,797, July 26, 1965. This application Apr. 6, 1970, Ser. No. 23,090

Claims priority, application Switzerland, July 28, 1964, 9872/64

Int. Cl. H05b 1/00

U.S. Cl. 219—381 7 Claims



A method and apparatus for rapidly heating gases, liquids, vapors and aerosols to a desired temperature by electric resistance heating. More particularly, the present disclosure is directed to a method and apparatus for rapidly heating up a medium such as gases, liquids, vapors, and aerosols to a desired temperature by means of an electric resistance heater, comprising the steps of guiding the medium to be treated through the electric resistance heater in such a manner as to expose said medium to a structural surface of at least about 800 square centimeters per cubic centimeter of medium to be treated.

3,833,792

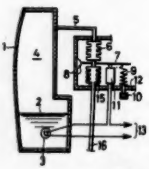
AUTOMATIC TEMPERATURE REGULATING DEVICE FOR USE WITH APPARATUSES FOR HEAT TREATMENT OF SYNTHETIC YARN

Nobuhisa Kodaira, 1-1-10 Shoan, Suginami-ku, and Mikio Kusunose, 423 Sunagawa-cho, Tachikawa-shi, both of Tokyo, Japan

Filed Aug. 23, 1973, Ser. No. 390,851

Int. Cl. F27b 9/06

U.S. Cl. 219—388 5 Claims



A plurality of pressure-sensing bellows are communicated with a plurality of heating vessels, respectively, through thin tubes, and a plurality of counter bellows are coupled to said respective pressure-sensing bellows in an opposed relationship thereto. Each of said pressure-sensing bellows is provided with a lever for actuating a micro-switch. Said plurality of counter bellows are communicated with a common constant-pressure chamber, so that the pressures in said plurality of counter bellows may be regulated as a whole by varying the pressure in said common constant-pressure chamber. In accordance with the variation of the pressures in said plurality of counter bellows, the temperatures of the heating vessels are regulated as a whole.

3,833,793

ELECTRICAL COOKER UNIT FOR A CERAMIC GLASS PLATE TYPE ELECTRICAL COOKER

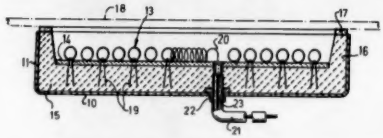
Joseph Anthony McWilliams, 160 Sutton Park Rd., and John Thomas Hughes, 3 Moorfields, Mamble, both of Kidderminster, Worcestershire, England

Filed Aug. 3, 1973, Ser. No. 385,558

Claims priority, application Great Britain, Aug. 5, 1972, 36682/72

Int. Cl. H05b 3/68

U.S. Cl. 219—464 3 Claims



An electrical cooker unit for use in the type of cooker in which a ceramic glass plate is placed above the electrical heating elements. The cooker unit consists of a cylindrical metal tray, the base and side wall of which is lined with electrical and thermal insulating material formed from particulate microporous thermal insulating material which has been consolidated into block form. The base layer of insulating material has a flat planar upper surface and the electrical heating element consists of a helically coiled uncovered wire laid out in the form of a flat spiral on such upper surface and secured solely by metal staples which engage in the base layer for part of the depth thereof. The ceramic glass plate rests upon the upper edge of the side wall of the thermal insulation, leaving a space between the under side of the plate and the electrical element.

3,833,794

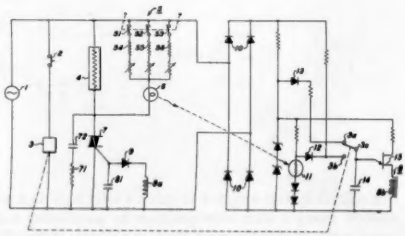
FIXING UNIT FOR USE IN A DUPLICATING APPARATUS

Munetaka Moriyama, Tokyo, Japan, assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 2, 1972, Ser. No. 303,297

Int. Cl. H05b 1/02

U.S. Cl. 219—502 7 Claims



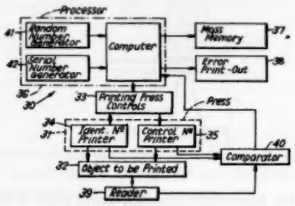
Apparatus for controlling the temperature of an infrared heating lamp used for fixing. The lamp is preheated and extra current is diverted through the lamp during fixing. A lamp and photocell arrangement senses input voltage variations and controls the apparatus to maintain the temperature of the heating lamp at a predetermined level.

3,833,795

METHOD AND MEANS FOR ASCERTAINING THE AUTHENTICITY OF SERIALLY NUMBERED OBJECTS

Avraham Shoshani, Kiryat Bialik; Dan Laor, Haifa; Dan Ben Zeev, Haifa; Dan Inbar, Haifa, and Benjamin Prosper Sabbah, Haifa, all of Israel, assignors to Elscint Limited, Haifa, Israel

Filed July 26, 1972, Ser. No. 275,310
Claims priority, application Israel, Aug. 5, 1971, 37456
Int. Cl. G06k *3/00*
U.S. Cl. 235—61.7 R 8 Claims



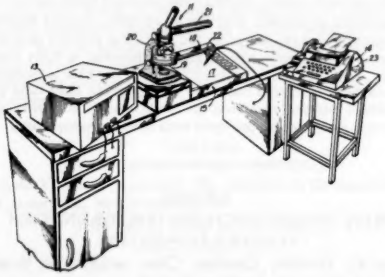
Control over the authenticity of serially numbered objects is provided by applying an ordered pair of numbers (including alpha-numeric characters as well as any other type of indicia, visible or not visible, used for identification purposes and readable by humans and/or machines) to each object, one of the pair being serially selected and constituting an identification number, and the other of the pair being ramdomly selected and constituting a control number. A master list is kept of the ordered pairs of numbers as they are applied to objects so that the authenticity of an object can be ascertained at a later date by comparing the control number of an object with the control number in the master list associated with the identification number of the object.

3,833,796

METHOD AND APPARATUS FOR CHROMOSOME DIGITIZING

Robert H. Fetner, and John C. Alderman, Jr., both of Atlanta, Ga., assignors to Georgia Tech Research Institute, Atlanta, Ga.

Filed Oct. 13, 1971, Ser. No. 188,716
Int. Cl. G06f *15/42*
U.S. Cl. 235—151.3 14 Claims



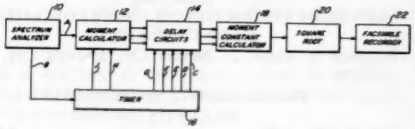
A chromatizer including an apparatus for and method of effecting the analysis of chromosomes including means for establishing an image of at least one chromosome, means for digitizing the distance each arm of the chromosome is from a preselected reference point, and means for automatically computing a number of quantitative measurements of the chromosome, including the length of each arm and the centromere index. The digitizing means includes means for identifying and recording the location of a plurality of points along each arm of the chromosome relative to the reference point. The establishing means includes means for superimposing the identifying means onto the image of the chromosome. The computing means includes means for displaying the computed quantitative measurements.

3,833,797

STATISTICAL NOISE PROCESSOR

Leon Grobman, Philadelphia; Benson Polin, Warminster, and Donald Savage, Danboro, all of Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 14, 1973, Ser. No. 415,910
Int. Cl. G06f *15/20*
U.S. Cl. 235—151.3 10 Claims



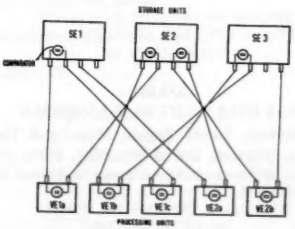
A statistical processing device for improving the signal to noise ratio of signals and transients within a noise environment. Samples of electrical signals indicative of ocean noise are applied to a calculator that obtains the mean, variance and third moment of the electrical signal. A delay circuit delays the calculator output signal for comparison with later produced electrical signal samples. A second calculator receives the outputs from the delay circuit and manipulates the difference between a first higher order moment signal to obtain an output signal having an amplitude indicative of a transient or target. The output signal is displayed on a lofargram which provides an enhanced visual indication of the sampled electrical signal contents.

3,833,798

DATA PROCESSING SYSTEMS HAVING MULTIPLEXED SYSTEM UNITS

Josef Huber, Munich, and Bernhard Schaffer, Munich, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Oct. 20, 1972, Ser. No. 299,283
Claims priority, application Germany, Oct. 28, 1971, 2153830
Int. Cl. G06f *11/00*
U.S. Cl. 235—153 AE 2 Claims



A circuit arrangement is described for the connecting of system units constituting a program controlled data processing

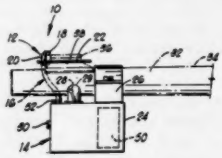
system. These system units are data processors and storage units. The individual system units are redundantly connected in multiplex fashion in order to insure system reliability. That is, a given defective system unit will be replaced by a like redundantly provided system unit, while the defective unit is placed in a testing state and isolated from the rest of the system. The redundance of the various processors may be provided for by providing them either in duplicate or in triplicate. Each said processor contains two standard data terminals. The individual processors are cyclically connected to storage units provided in triplicate, and these storage units which are equipped with a plurality of parallel, standard data terminals. Thus, at any given time, two like processing units are connected to one of the storage units.

3,833,799

GUN SIGHT SYSTEM FOR USE UNDER LOW AMBIENT LIGHT CONDITIONS

Normand A. Audet, 27 Bomber Cir., Midwest City, Okla. 73110

Filed Dec. 15, 1972, Ser. No. 315,533
Int. Cl. F41g 1/34
U.S. Cl. 240—6.41 **8 Claims**



A gun sight system for use with a conventional firearm or the like under low ambient light conditions. The system includes a conventional rear sight and an illuminated front sight bead employing a light-emitting diode as the source of visible light for the bead. Also included is a direct current power supply and driving circuit for operating the light-emitting diode. Another aspect of the invention is the employment of a photosensitive transistor and associated circuitry for adjusting the light output of the light-emitting diode so that will be proportion from to the ambient light. Thus the intensity of light from the diode increases when the amount of ambient light increases, and alternately, the output of the diode decreases when the amount ambient light decreases.

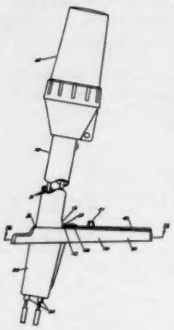
3,833,800

BOAT POLE LIGHT BASE ASSEMBLY

Donald E. Stewart, Grand Rapids, Mich., and Thomas J. Stonehouse, deceased, late of Wyoming, Mich. (Penny L. Stonehouse, administratrix), assignors to Atwood Corporation, Lowell, Mich.

Filed Jan. 2, 1973, Ser. No. 320,511
Int. Cl. B63b 45/04
U.S. Cl. 240—7.5 **14 Claims**

A base assembly for a removable pole light including a base plate having a bore therethrough for telescopically receiving a light pole. The base assembly has a cover plate which is horizontally slidable over the bore. In the preferred embodiment, the cover plate urges a locking clip member against the light pole to frictionally secure the pole within the base plate



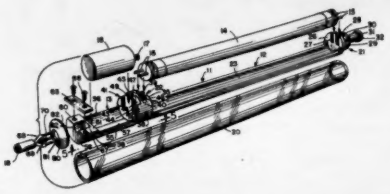
bore. When the pole is removed, the cover plate is slidable to cover the bore and is locked in the covering position by the locking clip member.

3,833,801

TUBE LIGHT HAND LAMP

Tony Trevithick, Gurnee, Ill., assignor to Daniel Woodhead, Inc., Northbrook, Ill.

Filed Oct. 12, 1972, Ser. No. 296,804
Int. Cl. F21l
U.S. Cl. 240—11.4 R **4 Claims**



A hand lamp with a fluorescent light tube having an elongated base with axially aligned light tube and lamp starter cradle portions, preferably made as an integral, plastics molding with slotted sockets receiving the electrical contact pins of a fluorescent light tube and a starter therefor, a light transmitting, envelope tube slidably fitted over the base in encasing relationship about said base and an elongated light tube and cylindrical starter mounted in said cradle portions, and elastomer discs closing the open ends of the envelope tube.

3,833,802

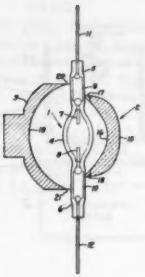
WIDE ANGLE OPTICAL SYSTEM FOR UNIFORM PLANAR ILLUMINATION

Elmer G. Fridrich, Chardon, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed May 15, 1972, Ser. No. 253,475
Int. Cl. F21v 13/04
U.S. Cl. 240—41.3 **8 Claims**

A compact system providing uniform illumination of a plane by means of a compact source and a correcting optical system. The illumination from a point source by itself is proportional to the cosine^3 of the angle which a ray from the source makes with the normal to the plane. A wide angle lens refracts radia-

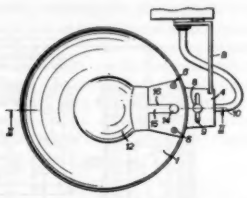
tion from the source into a 90° cone and redistributes it within the cone inversely as the cosine^3 of the angle so that the effective illumination on the plane is uniform. The system is particularly useful for obtaining uniform printing exposure of photosensitive plates in offset printing.



3,833,803
PARABOLIC SPOTLIGHT FIXTURE HAVING ROTATABLE LAMP HOLDER

Robert Heritage, Mortlake, England, assignor to Rotaflex (Great Britain) Limited, London, England

Filed May 14, 1973, Ser. No. 360,350
Claims priority, application Great Britain, May 22, 1972, 23943/72
Int. Cl. F21v *19/02*
U.S. Cl. 240—44.2 **1 Claim**



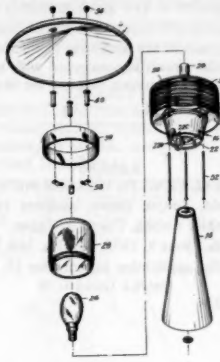
A spotlight fitting for use with standard service lamps has a laterally extending lamp-holder, an auxiliary reflector in front of the lamp position, to conceal the lamp filament and to reflect forwardly projected light rays, and the lamp holder is rotatable to permit focusing of the lamp filament relative to the reflectors.

3,833,804
LOW LEVEL LIGHT ASSEMBLY

Donald V. Vesely, Lombard, Ill., assignor to Gerneral Signal Corporation, New York, N.Y.

Filed July 5, 1973, Ser. No. 376,531
Int. Cl. F21p *5/00*
U.S. Cl. 240—125 **5 Claims**

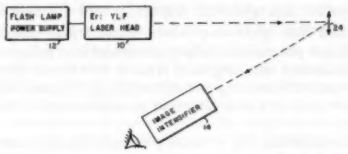
A low level light assembly or fixture for projecting light downwardly on a surrounding area while eliminating direct light to persons walking nearby. A louvered light-distributing housing is provided and also a hood for the fixture; the hood and louvered housing being locked together by a special arrangement which includes louver locking means in the form of upper and lower interfitting sleeves, the upper sleeve serving as the hood support. The hood locking means comprises a locking rod and a locking nut. The locking nut is held in a recess in the hood; the locking rod, which has a recessed head located at the base of the fixture, extends through the aforesaid sleeves and threadedly engages with the locking nut at the top of the hood.



3,833,805
LASER SYSTEM

Charles S. Naiman, Brookline, Mass.; E. P. Chicklis, Merrimack, N.H., and Arthur Linz, Winchester, Mass., assignors to Sanders Associates, Inc., Nashua, N.H.

Filed May 1, 1972, Ser. No. 249,172
Int. Cl. H01s *3/12*
U.S. Cl. 250—199 **4 Claims**

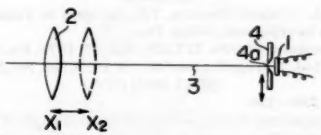


A room temperature optically pumped solid state laser operating in the 0.8 to 0.9 micron region with inherently low beam divergence enchances covert laser systems because of compatability with high quantum efficiency low noise photocathodes.

3,833,806
AUTOMATIC FOCUS CONTROL CIRCUIT

Takayoshi Sato, Tokyo, Japan, assignor to Fuji Photo Optical Co., Ltd., Omiya-shi, Japan

Filed Oct. 2, 1973, Ser. No. 402,763
Claims priority, application Japan, Oct. 4, 1972, 47-99572
Int. Cl. G03b *3/00*
U.S. Cl. 250—201 **7 Claims**



A vibrating slit is provided in front of a photoelectric element which is positioned on a focal plane of a taking lens of a

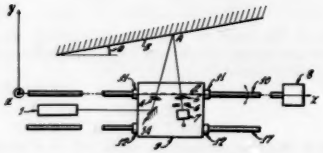
camera and receives a light image focussed thereon by the lens. The output current of the photoelectric element is differentiated through a differentiation circuit and is put into a differential amplifier at two input terminals thereof through memory circuits of different time constant connected with the two input terminals of the amplifier respectively. The output of the differential circuit is connected with an operating circuit for controlling a focussing ring and the like.

3,833,807

DIGITAL LENGTH MEASURING MEANS

Hideomi Takeda, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed June 8, 1973, Ser. No. 368,307
Claims priority, application Japan, June 21, 1972, 47-62108
Int. Cl. G01d *5/30*
U.S. Cl. 250—234 **10 Claims**



A digital length measuring means including a transparency diffraction grating, a base plate having a mirror plane which is inclined with respect to the surface of the grating and an optical system arranged with respect to said diffraction grating and said base plate to produce Moire fringe contour lines, which are photoelectrically transformed into pulses which indicate certain unit lengths of relative shift of the Moire fringe lines caused by moving said diffraction grating and said optical system as a unit in a direction perpendicular to the grating lines.

In a variation, two or more photoelectric elements may be provided to divide into equal parts one period of the Moire fringe lines produced at the image forming plane of the optical system. Also the transparency diffraction grating may be formed of two complex gratings whose grating lines are shifted by one-fourth pitch from each other, and two photoelectric transforming devices are provided corresponding to each of these two gratings so that the pulses indicating unit length are more finely divided. In another variation, the mirror plane of the base plate placed opposite to the transparency diffraction grating is formed with a triangular waveform and is positioned parallel to the grating surface.

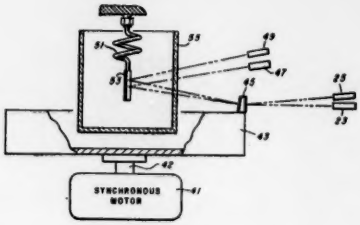
3,833,808

DEFLECTION ANGLE MEASURING APPARATUS AND METHOD

Harold A. Armand, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 212,455, Dec. 27, 1971, Pat. No. 3,788,144. This application Feb. 15, 1973, Ser. No. 332,966
Int. Cl. H01j *3/14*
U.S. Cl. 250—236 **5 Claims**

In an apparatus for measuring the rotation angle of a rotatable member, the rotation angle is measured as a function of the time required for a uniformly rotating object to rotate through the angle of deflection. An optical electrical system is employed to optically detect the deflection angle and electronically count the number of pulses of a reference oscillator signal which occur during the time required to uniformly



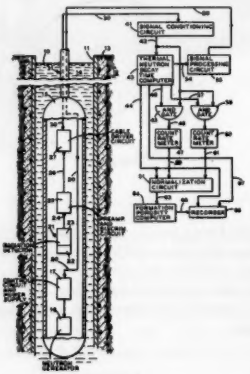
rotate through the detected angle. A display device is calibrated to display the count of the counter in actual units of angular rotation.

3,833,809

NEUTRON LOGGING OF FORMATION POROSITY AND CHLORINITY

Ralph G. Beil, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Continuation of Ser. No. 126,750, March 22, 1971, abandoned. This application May 9, 1973, Ser. No. 358,601
Int. Cl. G01v *5/00*
U.S. Cl. 250—270 **28 Claims**



An embodiment of the invention shows a pulse neutron technique for measuring earth formation porosity. For example, the inelastic neutron scattering gamma radiation emitted from a formation in a broad energy range provides a measure of the porosity in a way that is free of formation fluid and matrix composition influences. Preferably, the inelastic scattering gamma rays characterizing this measurement are observed in a 10 microsecond interval that is initiated during an early part of each neutron pulse. The observed inelastic scattering gamma ray activity is normalized to compensate for variations in neutron source strength. The normalized data then is converted directly into a formation porosity output.

3,833,810

METHOD OF X-RAY DIFFRACTION TOPOGRAPHY OF MONOCRYSTALS AND APPARATUS FOR EFFECTING SAME

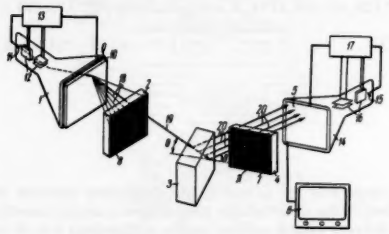
Valery Pavlovich Efanov, ulitsa Profsojuznaya, 96, kv. 192, Moscow; Nikolai Ivanovich Komyak, Kostromskoi prospekt, 22, kv. 71, Leningrad; Vsevolod Grigorievich Ljuttsau, ulitsa Garibaldi, 19, korpus 1, kv. 49, Moscow, and Nikolai Vasilievich Rabodzei, ulitsa Institutskaya, 6a, kv. 39, Fryazino Moskovskaya oblasti, all of U.S.S.R.

Filed Jan. 24, 1973, Ser. No. 326,335

Claims priority, application U.S.S.R., Jan. 28, 1972, 1743310; Jan. 28, 1972, 1747007

Int. Cl. G01n *23/20*

U.S. Cl. 250—273 3 Claims



A method of X-ray diffraction topography of monocrystals, consisting in irradiation of every point of an investigated area of the cross-section of a monocrystal by X-rays and separation of the radiation diffracted at a specific angle from said every point of the investigated area of the cross-section of the monocrystal, simultaneously for all these points of the investigated area. An apparatus for X-ray diffraction topography of monocrystals, realizing the above method, comprising a source of X-rays and an investigated monocrystal, a collimator, a radiation detector and a means for recording the topogram of the monocrystal, positioned successively in the path of the X-radiation. The collimator, of which the direction of collimation is oriented at a specified orientation angle in relation to the crystallographic axes of the monocrystal, is in the form of a two-dimensional matrix of parallel capillaries.

3,833,811

SCANNING ELECTRON MICROSCOPE WITH IMPROVED MEANS FOR FOCUSING

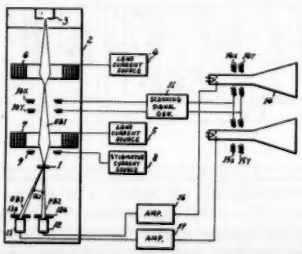
Hirotami Koike; Shigekata Sakurai, and Katsuyoshi Ueno, all of Tokyo, Japan, assignors to Nihon Denshi Kabushiki Kaisha, Tokyo, Japan

Filed July 9, 1973, Ser. No. 377,524

Claims priority, application Japan, July 11, 1972, 47-69360

Int. Cl. H01j *37/26*

U.S. Cl. 250—306 7 Claims



A scanning electron microscope for observing a transmitted electron scanning image of a specimen incorporating a means for detecting electron beams transmitted in more than one direction separately and a means for displaying scanning images corresponding to said detected beams, thus facilitating the focusing adjustment of tne condenser lens system incorporated in said scanning electron microscope.

3,833,812

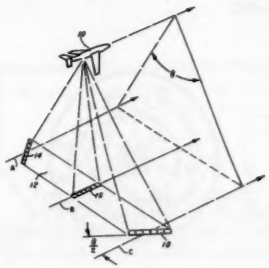
STABILIZATION SYSTEM FOR AIRBORNE SCANNERS

Frank N. Reilly, Plano; Jesse C. Wilson, and Charles P. Cole, both of Richardson, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 12, 1973, Ser. No. 350,565

Int. Cl. G01j *5/00*

U.S. Cl. 250—330 10 Claims



A system is provided for achieving stabilization and image derotation of an airborne scanner. The system includes a multichannel scanner, each channel producing a series of signals as a desired area is scanned. The relative time location of the signals in the various channels varies according to the scan position. A charge transfer device shift register is provided for receiving the output of each channel. Each shift register is in turn controlled by a variable frequency source for sampling the output of the scanner at a variable rate. The variable rate for each shift register is different and is related to the scan position such that rotation components of the scanner are eliminated. In a preferred embodiment, the output of the shift-registers is advantageously connected to a light-emitting-diode display.

3,833,813

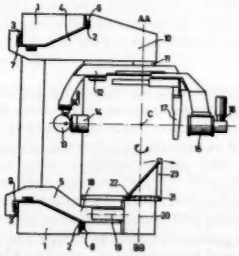
DEVICE FOR EXAMINING A PATIENT, IN PARTICULAR BY MEANS OF X-RAYS

Pierre Lucien Jules James, Saint-Gratien (Val D Oise), France, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 162,564, July 14, 1971, abandoned. This application Sept. 25, 1972, Ser. No. 292,120

Int. Cl. G03b *41/16*

U.S. Cl. 250—446 3 Claims



An x-ray examination device including on the frame two guides defining circular paths about a single horizontal axis,

with a first and a second carriage movable along said paths, the first carriage supports a radiation section, and the second carriage accommodates a patient support. The radiation section and patient support are also pivotable about a common vertical axis extending between them.

3,833,814

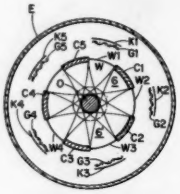
APPARATUS FOR SIMULTANEOUSLY UNIFORMLY IRRADIATING A REGION USING PLURAL GRID CONTROLLED ELECTRON GUNS

Samuel V. Nablo, Lexington, Mass., assignor to Energy Sciences Inc., Burlington, Mass.

Continuation of Ser. No. 151,640, June 10, 1971, abandoned. This application June 20, 1973, Ser. No. 371,763

Int. Cl. H01j *37/00*; **G01n** *23/00*

U.S. Cl. 250—492 **5 Claims**



This disclosure deals with novel techniques and apparatus for the electron-irradiation of objects bilaterally, by directing energetic electron beams substantially simultaneously into such objects from a plurality of widely different directions.

3,833,815

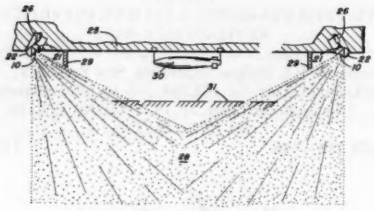
KRYPTON SOURCE

Ronald J. Fowler, Columbus, Ohio, assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 18, 1969, Ser. No. 800,837

Int. Cl. H01j *17/20*; **F41f** *5/02*

U.S. Cl. 250—496 **10 Claims**



A radiation source for use in an arming system for airborne weapons comprising a stainless steel sphere filled with krypton-85 (Kr^{85}) radioactive gas at high pressure and having gold plated internal surfaces to form Bremsstrahlung targets which continuously emit gamma radiation when subjected to the beta radiation from the Kr^{85}. A depleted uranium (U^{238}) or tungsten shield surrounds the steel sphere and means are provided for pivoting part of the shield away from the steel sphere to permit the gamma radiation to escape and irradiate part of the path followed by a released bomb. The Kr^{85} may be harmlessly dissipated in the atmosphere, if desired, by activation of an explosive squib fixed to a fill tube on the sphere.

3,833,816

APPARATUS FOR DETECTING THE CONDITION OF AN OPAQUE BAND-SHAPED MATERIAL TRAVELLING ON A DELIVERY SYSTEM

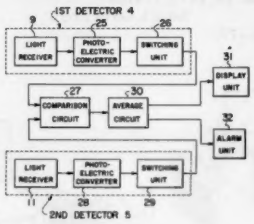
Tokumatsu Emura, Yokohama; Shigeo Kawabata, Tokyo, and Takashi Shimoma, Yokohama, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 5, 1973, Ser. No. 348,111

Claims priority, application Japan, Apr. 6, 1972, 47-34671

Int. Cl. G01n *21/18, 21/30*; **G02b** *5/14*

U.S. Cl. 250—561 **3 Claims**



An apparatus for detecting the parallelism between the lengthwise edge of an opaque band-shaped material travelling on a delivery system relative to the longitudinal axis of the delivery system wherein a first and a second detector are spatially arranged along the lengthwise edge, in the direction of travel of the lengthwise edge on the delivery system, so as to detect the position of the lengthwise edge, each detector including of a light projector and a light receiver facing said projector across the lengthwise edge of the travelling material. Each light receiver preferably includes an aggregate of numerous fine optical fibers and numerous photoelectric conversion elements connected to the individual fibers. Outputs from the first and second detectors are conducted from the numerous photoelectric conversion elements supplied with light from the light projectors to two input terminals of a differential amplifier which in turn generates outputs for detecting the parallelism of the edge of the band-shaped material travelling on the delivery system.

3,833,817

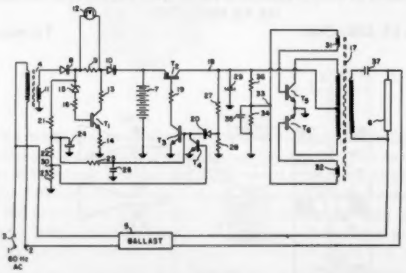
EMERGENCY LIGHTING SYSTEM

Raoji Patel, Watertown, Mass., assignor to North American Philips Corporation, New York, N.Y.

Filed Apr. 16, 1973, Ser. No. 351,243

Int. Cl. H02j *9/06*

U.S. Cl. 307—66 **12 Claims**



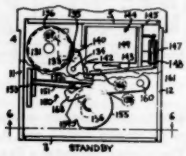
An emergency lighting system that includes an electric discharge lamp and a DC-AC converter to supply emergency power to the lamp upon failure of the AC line voltage. A battery is charged with a constant current from the AC supply

voltage. A transistor switching device connects the battery to the converter when a sensing device senses the absence of the AC voltage. A bias voltage that holds the switching device closed is derived from the battery via the emitter-collector path of the transistor switch. A given drop in the battery voltage is sensed to open the switching device to prevent an excessive current drain on the battery. The presence of the AC voltage is sensed to hold the switching device open and thereby prevent operation of the converter during normal operation of the lighting system.

3,833,818
CONTROL DEVICE AND SYSTEM

John L. Harris, Clearwater, Fla., assignor to Deltral Corp., Bellwood, Ill.

Division of Ser. No. 179,422, Sept. 10, 1971, Pat. No. 3,745,273. This application Jan. 8, 1973, Ser. No. 321,715
Int. Cl. H01h *7/00*
U.S. Cl. 307—141 R **9 Claims**

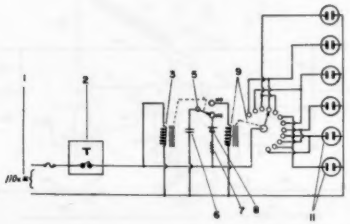


A heavy duty contactor mechanism for refrigeration compressor motors is directly actuated by a timing mechanism controlled by a thermostat. The timing mechanism protects against false starts from thermostat vibration, and interposes a delay between stopping and starting of the compressor sufficient to allow pressures to equalize. Power for operating the contactor switches is stored in a spring while the timer motor is running through the delay period.

3,833,819
HOME SIMULATOR

John W. Dietrich, 3591 Snyder Dr., Wooster, Ohio 44691

Filed May 29, 1973, Ser. No. 364,433
Int. Cl. H01h *7/00*
U.S. Cl. 307—141.8 **1 Claim**

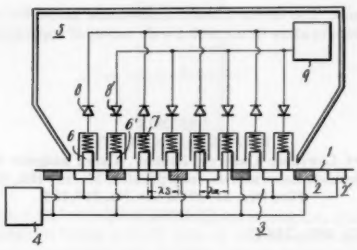


This device is a system for pseudo-random electrical switching of lights and/or small radios in the home or office. Timing of the switching intervals is unpredictable, except by long-time (weekly) observance. A combination of two (2) non-synchronous clocks and a random-cut cam-wheel is used to operate a microswitch. That switch controls the action of a stepping-switch for electrical distribution to lamps or small radios. The stepping-switch is wired for non-consecutive distribution to increase the appearance of random time intervals.

3,833,820
ELECTRIC POWER SUPPLYING AND RECEIVING DEVICE

Shinobu Itoh, 401, 6-10 Shinkawa-5, Mitaka-shi, Tokyo, Japan

Filed Nov. 20, 1972, Ser. No. 307,789
Claims priority, application Japan, Dec. 1, 1971, 46-97515
Int. Cl. H02m *1/18*
U.S. Cl. 307—146 **7 Claims**



The device comprises an electric power supplying member including a plurality of sets of electric power supplying contact pieces and an electric power receiving member including a plurality of sets of electric power collecting contact pieces, the arrangments of the supplying and collecting contact pieces being not dimensionally coincident with each other. The supplying contact pieces or contacts are arranged in sets each including a number thereof equal to the number of different polarity terminals of a source of electric potential, with each supplying contact of a set being connected to a different respective terminal of the source and corresponding supplying contacts of successive sets being connected to the same respective terminal of the source. Respective diodes are connected to the collecting contact pieces or contacts, with adjacent diodes being poled in opposite respective directions and connected to different respective terminals of a load. The receiving member is selectively positionable in engagement along the supplying member, and the respective arrangements of the supplying and receiving contacts is such that, when the receiving member is engaged with the supplying member, the input terminals of the load are continuously electrically connected to the same respective output terminals of the source irrespective of the relative positions of the supplying and receiving members. Thereby, responsive to a voltage from the source being impressed on the supplying contacts, a rectified current is supplied to the load in accordance with the relative polarities of the diodes.

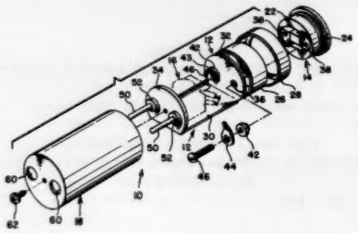
3,833,821
VOLTAGE CONVERTER

Donald R. Weaver, 9710 N.E. 24th, Bellevue, Wash. 98004

Filed Apr. 19, 1973, Ser. No. 352,639
Int. Cl. H02j *7/00*
U.S. Cl. 307—150 **8 Claims**

Voltage converter primarily for travelers to transform 220/240 volts A.C. to 110/120 volts A.C. The device is con-

structed of all solid state electrical components. It is designed so that the mounting bracket for the components also acts as a



heat sink. The device includes a resistance across the output terminals to allow its use with a wide variety of appliances.

3,833,822

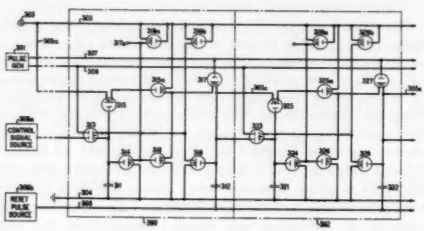
RIPPLE FREE COUNTER

Robert Lawrence Carbrey, Boulder, Colo., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 21, 1972, Ser. No. 317,183

Int. Cl. H03k *23/08*

U.S. Cl. 307—225 C **25 Claims**



A ripple free counter includes a plurality of cascaded stages and an input stage. The input stage input is connected to a voltage source and counting signals are applied to all stages simultaneously. Each stage includes first and second storage devices operative in first and second states. The second storage device is connected to the stage output. A first switching arrangement is responsive to the counting signal and the first storage device being in its first state to connect the stage input to the stage output. When all preceding stages have their first storage devices in their first state, the source voltage is applied to the stage input via the series connected first switching arrangements of all preceding stages to place the stage second storage device in its first state. A second switching arrangement is responsive to the counting signal and the stage first storage device being in its second state to place the second storage device in its second stage. Upon termination of the counting signal, a third switching arrangement is responsive to the stage second storage device being in its first stage and the second storage device of the immediately preceding stage being in its first state to place the stage first storage device in its second state and is responsive to the stage second storage device being in its second stage and the second storage device of the immediately preceding stage being in the first state to place the first storage device of the stage in its first state.

3,833,823

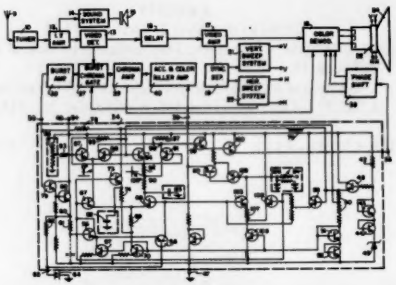
SIGNAL PROCESSING CIRCUIT FOR A COLOR TELEVISION RECEIVER

Gildo Cecchin, Niles, and Francis H. Hilbert, Rover Grove, both of Ill., assignors to Motorola, Inc., Franklin Park, Ill.

Continuation of Ser. No. 121,009, April 4, 1971, abandoned, which is a division of Ser. No. 880,320, Nov. 26, 1969. This application May 15, 1973, Ser. No. 360,431

Int. Cl. H03k *9/02*

U.S. Cl. 307—235 **2 Claims**



A color television receiver uses an integrated circuit to provide the subcarrier reference signals and ACC control voltage for the receiver. The circuit includes a first differential amplifier, unbalanced at the burst signal frequency, operated as the color reference oscillator to provide first and second differently phased output signals which are applied to a pair of differential steering gates. A phase-shift hue control of the color reference signal is obtained by adding selected outputs of the pair of differential steering gates. In addition, a differential amplifier is operated as a diodeless detector for deriving an ACC voltage from the oscillator output when burst signals are applied to the input of the oscillator.

3,833,824

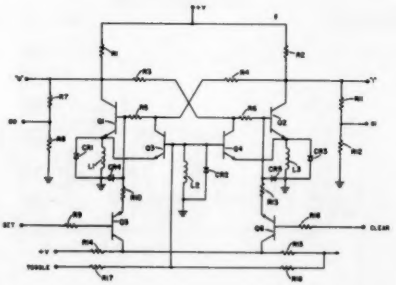
RADIATION HARDENED FLIP-FLOP

Kenneth B. Parks, Staley, N.C., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sept. 6, 1972, Ser. No. 286,789

Int. Cl. H03k *3/286*

U.S. Cl. 307—291 **1 Claim**



Two inductors are inserted in series with the controlling transistors' paths to ground, and diodes shunt the inductors. Further diodes are back connected between the base circuits of the controlling transistors and ground. A third inductor shunted by a diode is connected between the base circuits of

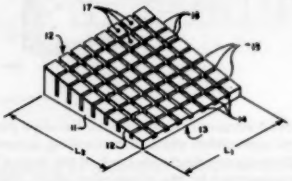
the toggle transistors and ground. The time constants of these circuits are selected such that the flip-flop returns to its initial state after a high radiation level has subsided due to the stored energy in one of the inductors.

3,833,825

WIDE-BAND ELECTROACOUSTIC TRANSDUCER

David E. Haan, Edmonds, Wash., assignor to Honeywell, Inc., Minneapolis, Minn.

Filed Apr. 11, 1973, Ser. No. 349,937
Int. Cl. H01j 7/00
U.S. Cl. 310—9.5 9 Claims



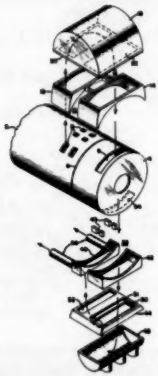
A thickness-mode electroacoustic transducer wherein an active body of non-uniform thickness is employed to provide uniform wide-band frequency response. The body may be wedge-shaped, having non-parallel planar major surfaces. At least one of the major surfaces is subdivided into a two-dimensional array of poles by means of grooves formed in the surface for the purpose of providing improved frequency and directional response.

3,833,826

GAS-COOLED DYNAMOELECTRIC MACHINE

Sterling C. Barton, Scotia; James B. Archibald, and Robert W. Albright, both of Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed June 21, 1973, Ser. No. 372,052
Int. Cl. H02k 9/14
U.S. Cl. 310—52 5 Claims



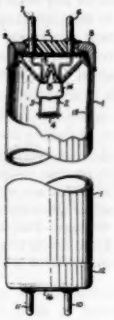
A dynamoelectric machine with a mid-frame section and an end-frame section has manifold means comprised of a mid-frame manifold and an end-frame manifold, each sealingly connected to the respective frame sections. A gas-carrying transition means for conveying cooling gas between the manifolds is sealingly connected to the manifold means. Sealing rails facilitate the attachment of the gas-carrying transition means to the manifold means and reduce the overall space occupied by the dynamoelectric machine.

3,833,827

LAMP EMPLOYING A SILICA MODIFIED PHOSPHER

Francis Nathan Shaffer, Towanda, Pa., assignor to GTE Sylvania Incorporated, Seneca Falls, N.Y.

Division of Ser. No. 183,516, Sept. 24, 1971, Pat. No. 3,790,494, which is a continuation-in-part of Ser. No. 30,461, April 21, 1970, abandoned. This application Apr. 13, 1973, Ser. No. 350,920
Int. Cl. H01j 61/44, 61/48
U.S. Cl. 313—486 3 Claims



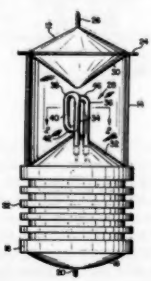
Silica-modified, lead-activated calcium tungstate phosphor compositions having a Ca:W ratio of substantially 1 and substantially all calcium and tungsten present as calcium tungstate are disclosed wherein the phosphor contains, as a modifier, silicon dioxide in an amount sufficient to produce increased brightness to about 0.03 mole per mole of calcium tungstate and as an activator, lead in an amount sufficient to produce luminescence to about 0.03 mole per mole of calcium tungstate. A process for producing the phosphor composition is also disclosed wherein in addition to the sources of calcium and tungstate in a Ca:W ratio of about 1 and a lead source there is added extremely finely divided silicon dioxide to form a relatively uniform admixture that is thereafter milled to a particular particle size and heated under controlled temperature conditions for a time sufficient to produce the luminescent phosphor composition. Additionally, an improved lamp utilizing a silica modified lead activated calcium tungstate phosphor is disclosed.

3,833,828

ILLUMINATION ARRAY STRUCTURE

Joseph Vivari, 5015 Fort Sumner Dr., Montgomery, Md. 20016

Filed Aug. 16, 1972, Ser. No. 281,006
Int. Cl. H01j 61/32
U.S. Cl. 313—111 17 Claims



A lighting element for illumination preferably having a single elongated envelope containing a gaseous medium emitting

white or colored, continuous or intermittent, light upon excitation by electrical current. The envelope is formed in a tortuous configuration and, preferably includes within a single envelope all of the poles of the array. The said poles each have a substantially parallel, preferably vertical axis and are at least four in number with one of this number being substantially centrally located relative to the remaining poles of the array. The array is so constructed that at least 75 percent of the surface areas of the exterior facing poles thereof are viewable on any vertical plane substantially parallel to the vertical axis of the array from any point on any such vertical plane spaced a distance at least equal to the closest spacing between the exterior surfaces of the most proximate viewable pole and the nearest pole thereto. Preferably the point of viewing is many multiples of such distance. In preferred embodiments, the amount of light viewable from any of said points on any of said planes is substantially equal. In further preferred embodiments, the exterior poles, excluding the central pole, are cylindrically disposed, as if they were positioned on the outer wall of a cylinder substantially parallel to the poles and to the vertical axis of the array. The poles are so disposed as to achieve maximum effective viewable illumination per unit of light lumens and per unit of wattage. The described embodiments eliminate, or reduce to a minimum, any flicker observable by a viewer as the viewer moves relative to the lighting element.

3,833,829

ION SOURCE

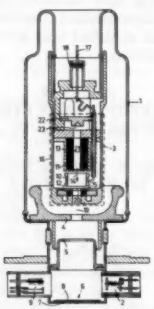
Otto Reifenschweiler, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 14, 1972, Ser. No. 315,096

Claims priority, application Netherlands, Jan. 3, 1972, 7200001

Int. Cl. H05h *5/02*

U.S. Cl. 313—360 **2 Claims**



An ion source having an anode between two cathodes and means for producing an axial magnetic field. Detremental heating of the cathode present opposite to the ion exit aperture by particles which are accelerated in the reverse direction and have a charge which is opposite to that of the extracted ion beam is prevented. For that purpose said cathode and the means for producing an axial magnetic field have an axial aperture. A collector electrode is present for capturing the relevant particles. The ion source is particularly suitable for a sealed neutron generator.

3,833,830

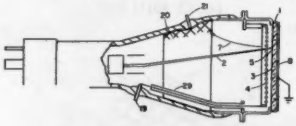
ULTRASONIC IMAGING TUBE

William R. Turner, Silver Spring, Md., assignor to Automation Industries, Inc., Silver Spring, Md.

Continuation of Ser. No. 79,135, Oct. 8, 1970, abandoned, which is a division of Ser. No. 756,866, Sept. 3, 1968, Pat. No. 3,577,171. This application June 13, 1972, Ser. No. 262,418

Int. Cl. H01j *31/495*

U.S. Cl. 313—369 **4 Claims**



An improved ultrasonic imaging tube having a piezoelectric face plate or conversion plate, a controlling screen adjacent thereto and a collector electrode back of the screen for receiving current generated by the conversion plate. The collector current is utilized to control a video tube synchronized with the ultrasonic tube, and is shunted in feedback fashion to the screen to control terminal admittance thereof and thereby increase the signal to noise ratio of the system as well as to raise the effective signal level.

3,833,831

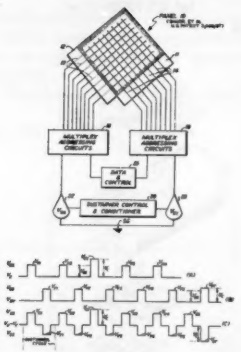
ELECTRONIC CONDITIONING OF GASEOUS DISCHARGE DISPLAY PANELS

William D. Petty, Perrysburg, Ohio, and J. Kirkwood H. Rough, Riverside, Calif., assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Mar. 31, 1972, Ser. No. 240,022

Int. Cl. H05b *37/00*

U.S. Cl. 315—169 TV **2 Claims**



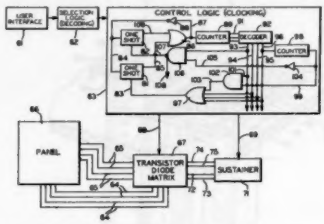
There is disclosed a method and apparatus for electronic conditioning of gaseous discharge display panels particularly of the type disclosed in Baker et al. U.S. Pat. No. 3,499,167 and Bitzer et al. U.S. Pat. No. 3,559,190. Electronic conditioning is achieved by periodically causing unstable discharges in the panel particularly at all sites which are not in the on state. This is achieved by applying an increased amplitude sustainer pulse at regular intervals not exceeding about 200 microseconds between pulses. By applying larger magnitude pulses which are above the firing voltage but below the voltage level required to turn a cell "on", the discharge sites in the panel are conditioned for uniform operation.

3,833,832

ELECTRONIC CONDITIONING OF GAS DISCHARGE PANELS BY INVERSION INTERNAL EXTENSION

Michael E. Fein, Toledo, and Jerry D. Schermerhorn, Swanton, both of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed June 22, 1973, Ser. No. 372,543
Int. Cl. H05b *41/29*
U.S. Cl. 315—169 R 22 Claims



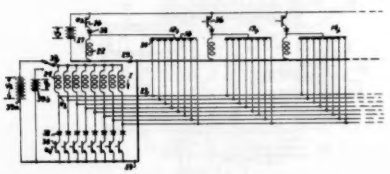
The conditioning or priming of multicelled gas discharge display-memory panels, of the type in which a discharge in a hermetically enclosed ionizable gas generates charges alternately collectable on pairs of discrete areas of spaced dielectric surfaces which are backed by conductors of first and second conductor arrays to define a plurality of discharge cells, is enhanced and their operation made more reliable by periodically inverting the state of all cells in the panel. Extension of the interval of inversion of the discharge state of the panel beyond the half period of a normal sustainer voltage cycle increases the probability that the cells normally in the "off state" will be transferred to the "on state." This improvement permits less frequent inversions of discharge state without detriment to the cell writing reliability of the panel thereby enhancing the contrast ratio between "on" cells and "off" cells. A clocking circuit for regular sustainer voltage cycles and for a regular, periodic, extended interval device inverting sustainer voltage is shown with a number of sustainer wave form constructions for the inverting condition.

3,833,833

DRIVE CIRCUITRY FOR LIGHT EMITTING FILM DISPLAYS

Alan H. Nelson, 4232 La Concetta Dr., Yorba Linda, Calif. 92686

Filed Aug. 20, 1973, Ser. No. 390,097
Int. Cl. H05b *33/00*
U.S. Cl. 315—169 TV 16 Claims



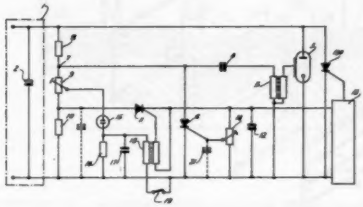
Driving circuitry for multiplexed light emitting film displays is shown wherein the unselected segment electrodes of a segment matrix and/or the unselected digit electrodes are connected together to prevent establishment of floating complex series-parallel capacitance networks which could otherwise drive certain of the unselected electrodes to emit unwanted light. Also, the polarity of the voltage applied to inductors forming part of the electrode drive circuits is reversed during each segment drive cycle to eliminate decrease of light intensity of a respectively fired electrode due to energy losses incurred in the inductors and in the display.

3,833,834

METHOD AND ARRANGEMENT FOR INITIATING A FLASH IN AN ELECTRONIC FLASH UNIT HAVING AUTOMATIC EXPOSURE CONTROL

Heinz Engelstatter, Bad Soden, and Gotthard Christoph Mahlich, Kronberg/Ts., both of Germany, assignors to Braun Aktiengesellschaft, Frankfurt, Germany

Filed Feb. 8, 1973, Ser. No. 330,872
Claims priority, application Germany, Feb. 12, 1972, 2206773
Int. Cl. H05b *37/00*
U.S. Cl. 315—241 P 9 Claims



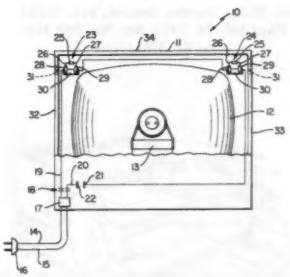
The operating voltage for the automatic exposure control circuit terminating the flash is furnished from a storage capacitor which in turn is energized from the ignition voltage source upon activation of the flash release contact. A threshold circuit is responsive to the voltage across the storage capacitor and activate the ignition circuit, thereby igniting the flashtube, when the voltage across the capacitor is substantially equal to the operating voltage required for the automatic exposure control circuit.

3,833,835

MEANS AND METHOD FOR PROTECTING AN OVERHEATING COMMUNICATION UNIT

Emil Robert Plasko, Washington Township, Ohio, assignor to Micro Devices Corp., Dayton, Ohio

Filed Jan. 8, 1973, Ser. No. 321,754
Int. Cl. H02h *5/04*
U.S. Cl. 317—40 R 3 Claims



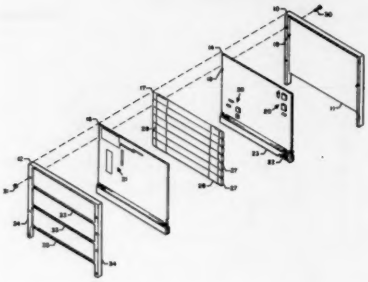
In an electrically operated communication unit, such as a television set, radio, etc., having an outer casing and electrically operated parts disposed in the casing and being supplied electrical current through power source lines of the unit, the improvement of a thermally responsive device disposed in one of the power source lines to open that line when the device is heated to a certain amount by a malfunctioning and thereby an overheating part of the unit. The thermally responsive device is located adjacent the ventilation openings of the casing so that air flow from inside the casing out through the openings will pass over the device to be sensed thereby.

3,833,836

PRINTED CIRCUIT BOARD PACKAGE WITH COOLING AND VIBRATION DAMPING MEANS

Alan W. Moksu, Nashua, and Joseph C. Briley, Milford, both of N.H., assignors to Sanders Associates, Inc., Nashua, N.H.

Filed June 18, 1973, Ser. No. 370,901
Int. Cl. H05k 7/20
U.S. Cl. 317—100 6 Claims



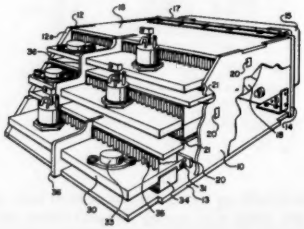
Printed circuit board package for severe environmental conditions of temperature, humidity and altitude as well as for relatively high vibration applications. First and second printed circuit boards are arranged in the recesses of first and second metallic plates and a resilient means located between the two printed circuit boards presses each board against its corresponding recess surface. In one embodiment, the resilient means takes the form of a sheetlike assembly consisting of a plurality of parallel arranged strips of rubber tubing which are held together by means of a severe environmental tape, such as high temperature fluorocarbon tape.

3,833,837

MODULAR COOLING ENCLOSURE WITH EXPANDABLE COOLING CELLS

Barry R. West, 2921 Croydon, Denton, Tex. 76201

Filed July 20, 1973, Ser. No. 380,966
Int. Cl. H01l 1/12
U.S. Cl. 317—100 7 Claims



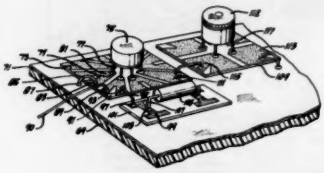
Disclosed is a forced convection cooling apparatus for mounting and cooling electronic components. Modules carrying closely spaced fins are adapted for mounting within an enclosure in a repetitive gridwork pattern leaving the electronic devices exposed on the downstream end of the enclosure.

3,833,838

ELECTRONIC COMPONENT MOUNTING WAFERS FOR REPEATED CONNECTION IN A VARIETY OF CIRCUIT DESIGNS

Allan Dale Christiansen, 3034 Nestall Rd., Laguna Beach, Calif. 92651

Filed Nov. 13, 1972, Ser. No. 305,724
Int. Cl. H05k 1/14
U.S. Cl. 317—101 CC 7 Claims



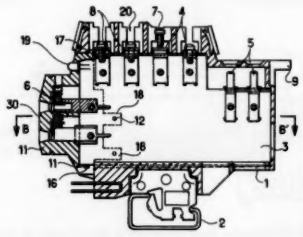
There is disclosed a plurality of wafers, each having a multiplicity of sets of electrically conducting pads, the pads within one set being electrically connected together and electrically isolated from each of the other sets. At least one pad in each of the sets has a connecting area adapted to receive and be soldered and unsoldered repeatedly to a conductive mounting lead of an electronic component. At least another pad in each of the sets having a connecting area adapted to receive and be soldered and unsoldered repeatedly to a conductive interconnecting lead which may connect one set of conducting pads with another. Each of the sets of pads has a thickness and shape which provides an electrically conducting path of sufficient length between each pad connecting area in the set to substantially isolate from one connecting area excessive and damaging heat from soldering and unsoldering conductive leads at another connecting area.

3,833,839

TERMINAL BOX CONTAINING A PRINTED CIRCUIT CARD

Jean Debaigt, Maisons Laffitte, France, assignor to CGEE Alsthom, Levallois-Perret, France

Filed Jan. 22, 1973, Ser. No. 325,796
Claims priority, application France, Jan. 21, 1972, 72.2084
Int. Cl. H05k 7/14
U.S. Cl. 317—118 10 Claims



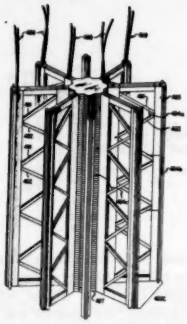
Terminal box containing a printed circuit card, characterized more particularly in that it comprises, moreover, electrical connection terminals forming, with the printed circuit card, a single-piece block, and a body in the form of a plate which is placed transversely and standing on its narrowest edge on a support such as a profiled ledge, one of whose sides has a hollowed part for accommodating the block formed by the terminals and the printed circuit card.

3,833,840

CYLINDRICALLY ARRANGED MODULAR MAIN DISTRIBUTION FRAME

Frank William Sinden, Summit, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 14, 1973, Ser. No. 369,901
Int. Cl. H02b 1/04
U.S. Cl. 317—122 6 Claims



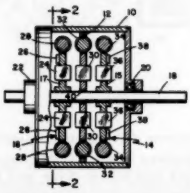
A modular main distribution frame having a plurality of modules is configured such that the modules are radially arranged about a stack of quasi-circular interconnection circuit boards. Each of the modules has a plurality of terminal strips affixed thereto in an angularly alternating arrangement. Those terminal strips having a first angular orientation terminate outside cable pairs while those with the opposite angular orientation terminate equipment cable pairs. Interconnection between equipment and outside cable pairs normally occurs between adjacent terminal strips. Where the cable and equipment terminal pairs are not in the same module, interconnection is effected through one of the interconnection circuit boards. This arrangement permits any equipment terminal pair to be accessible to any line terminal pair by using only short, easily removable jumpers.

3,833,841

PRIME MOVER WITH INTERNAL POWER SOURCE

Donald D. Loomis, 5402 Gilbert Dr., San Diego, Calif. 92115

Filed Nov. 26, 1971, Ser. No. 202,160
Int. Cl. H02p 13/18
U.S. Cl. 318—139 6 Claims



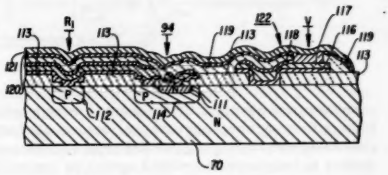
A prime mover utilizing an internal direct current power source. The preferred source is a battery adapted to convert energy from spontaneous nuclear disintegration into electrical current. Such a nuclear battery is employed to take advantage of its long life and is utilized in conjunction with a solid state electronic switch to convert the DC current generated by the battery into alternating current to produce periodic polarity reversal on a coil. The timing of the polarity reversal and the number of coils utilized determine the operating speed of the motor.

3,833,842

MODIFIED TUNGSTEN METALLIZATION FOR SEMICONDUCTOR DEVICES

James A. Cunningham, Dallas, and Clyde R. Fuller, Plano, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 730,047, May 17, 1968, abandoned.
This application Mar. 9, 1970, Ser. No. 17,040
Int. Cl. H01l 3/00, 5/00
U.S. Cl. 317—234 R 12 Claims



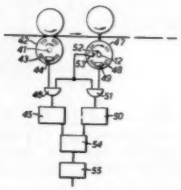
Disclosed is a tungsten-modifying metal ohmic contact and electrical interconnection system for semiconductor devices that are subjected to corrosive environments. A contact and interconnection system is formed using a layer composed of a mixture of tungsten and a modifier metal, such as titanium, the system having the desired characteristics of the tungsten system but with greatly increased corrosion resistance which allows devices using such a system to be mounted in nonhermetic packages.

3,833,843

ROTARY DRIVE CONTROLS

Walter Howard Bossons, Almondsbury, England, assignor to Masson Scott Thrissell Engineering Limited, Bristol, England

Filed Jan. 18, 1973, Ser. No. 324,864
Int. Cl. H02p 1/04, 5/16
U.S. Cl. 318—11 9 Claims



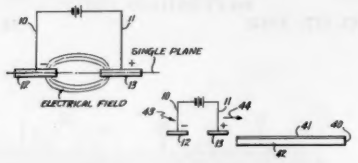
Two rotary members are required to rotate not necessarily with the same or related circumferential speeds throughout a cyclic period, but at least during part of each revolution the speeds should have a given relationship. The relative cyclic periods are also required to be adjustable while maintaining that relationship intact. The speed of one rotary member over at least the part revolution is detected and compared with the speed of the other member detected over the same period. Any departure of the speeds from their required relationship gives a signal that is used to adjust the drive to one of the members to restore that relationship. When the relative cyclic periods are altered the correcting circuit follows that adjustment and maintains the relationship.

3,833,844

TRIBOELECTROSTATIC CHARGING

Edward W. Wagner, Elmhurst, Ill., assignor to DeSota, Inc., Des Plaines, Ill.

Filed June 5, 1972, Ser. No. 259,581
Int. Cl. G03g *15/02*
U.S. Cl. 317—262 A **9 Claims**



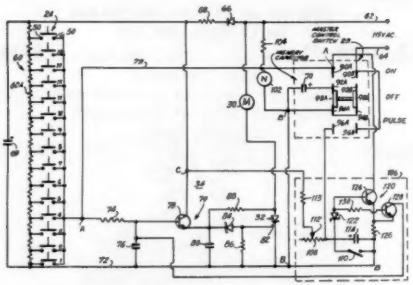
Surfaces are electrostatically charged using a triboelectrostatic effect enabling conventional corona discharge to be eliminated and making a grounded support unnecessary. The surface to be charged is rubbed against an electrode of one charge sign while it is passed through an electrical field between that electrode and a second electrode of opposite charge sign, both of which are positioned on the same side of the surface to be charged. At least one of the electrodes is surfaced with a low conductivity friction shield which is preferably made of chrysotile asbestos. Only one surface of a conventional photoconductive sheet is contacted, and small batteries are ample to power the electrodes which are supplied with high voltage at low amperage.

3,833,845

TOUCH BUTTON CONTROL SYSTEM

Christopher R. Smallbone, Port Colborne, and Laurent W. Beaudoin, Welland, Ontario, both of Canada, assignors to General Signal Corporation, Rochester, N.Y.

Filed July 18, 1973, Ser. No. 380,416
Int. Cl. H02p *5/16*
U.S. Cl. 318—305 **11 Claims**



An electronic control system especially adapted to control a universal motor with respect to pre-determined speeds, in order to provide a variety of desired functions, and with respect to its energization time

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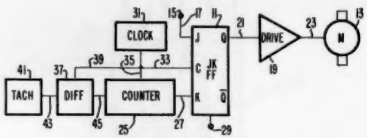
3,833,846

DIGITAL VELOCITY SENSOR FOR MOTOR BRAKING

Truman T. Schmalzriedt, Westland, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed Aug. 30, 1973, Ser. No. 393,015
Int. Cl. H02p *3/06*
U.S. Cl. 318—369 **13 Claims**

A method and apparatus for digitally controlling the braking energy to a motor so as to eliminate under-shoot or over-shoot. A digital differentiator is used to generate a narrow-width pulse for every rise and fall of a motor tachometer pulse output. The period of these pulses is proportional to the motor velocity and the pulses are used to continuously reset a digital counter. When braking is required, a control flip-flop is "set" causing braking energy to be sent to the motor by way of a low dissipation digital driver. The duration of application of this braking energy is controlled by the digital counter which is clocked at a rate such that at normal operating speeds for the motor, the counter is reset to begin a new count long before a



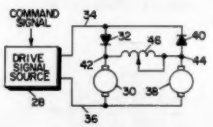
predetermined count is reached. Once the control flip-flop has been "set" and the braking energy is being supplied to the motor, the reset pulses from the digital differentiator will be generated less frequently, the counter will be reset less often, and the clock count between successive resets will become greater. Eventually, when the speed of the motor has been substantially reduced and is approaching zero, the counter will be able to reach the predetermined count before being reset and a signal representative of the attainment of this predetermined count is used to "reset" the control flip-flop thereby turning off the supply of braking energy to the motor.

3,833,847

ANTI-BACKLASH SERVOMOTOR DRIVE SYSTEM

Leroy U. C. Kelling, Waynesboro, Va., assignor to General Electric Company, Lynn, Mass.

Continuation of Ser. No. 159,750, July 6, 1971. This application July 3, 1973, Ser. No. 378,931
Int. Cl. H02p *1/54*
U.S. Cl. 318—630 **4 Claims**



A two servomotor drive system wherein the servomotors generate (1) opposing torques at or near standstill to take up backlash in a rack and pinion drive, and (2) additive torques at other velocities. Two servomotor circuits, each comprising a servomotor connected in series with a diode, are connected across the output terminals of a servomotor drive signal source. The diodes conduct in opposite directions. The servomotor-diode junctions in the two circuits are connected by a saturating reactor. At and near standstill, the drive signal source generates alternating current pulses which cause opposing torques to be produced by the two servomotors. At higher velocities, the drive signal is a pulsating DC signal which is applied to one of the servomotors directly and to the other of the servomotors through the saturated reactor to cause the motors to produce additive torques.

3,833,848

D.C.-FED REGULATED DIRECT-CURRENT SUPPLY

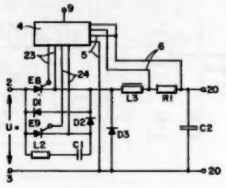
Tom Kastrup Petersen, Nordborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Continuation of Ser. No. 792,622, Jan. 21, 1969, abandoned. This application Jan. 27, 1972, Ser. No. 221,452

Claims priority, application Germany, Jan. 23, 1968, 1638008

Int. Cl. H02m *1/08*

U.S. Cl. 321—19 5 Claims



The invention relates to a D.C.-fed regulated direct current voltage supply for feeding an inverted converter connected to a three phase motor. The voltage supply has current sensing means to which is connected voltage regulating means. The voltage regulating means is responsive to a maximum predetermined current value to reduce the voltage to prevent the current from exceeding the predetermined value. The voltage regulating means includes an SCR or equivalent which is opened and closed by impulses. The open and/or closed periods are of varying duration to prevent the current from exceeding the predetermined value.

3,833,849

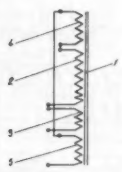
TRANSFORMERS WITH ADDITIONAL COMPENSATING REACTOR WINDINGS FOR ELECTRIC ARC WELDING

Stefan I. Grosu, Bucharest, Romania, assignor to Institutul De Cercetare Si Proiectare Pentru Industria Electrotehhica, Bucharest, Romania

Continuation of Ser. No. 245,829, April 20, 1972, abandoned. This application July 26, 1973, Ser. No. 382,830

Int. Cl. B23k *9/10*

U.S. Cl. 323—44 R 2 Claims



Transformer for electric arc welding which allows the stepwise control of the welding current by means of an inductance coil connected in the primary or secondary circuit, formed by coils placed for each phase, on the magnetic core of the respective phase, on which there are also mounted the primary and secondary windings. These coils are connected in groups by two pieces. Of the two coils of a group, one is magnetically strongly-coupled with the primary winding and the other, with the secondary winding, which leads to the increase of the reactor efficiency. The transformers can be monophase or polyphase, especially three-phase. The three-phase transformers may be employed for the supply of alternating-current welding, three-phase arc welding, or of direct curent arc welding through rectifiers.

3,833,850

SYSTEM FOR TRANSFORMING A PHYSICAL PARAMETER INTO AN ELECTRICAL SIGNAL

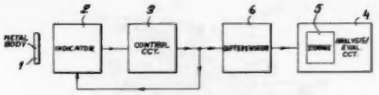
Gunther Weber, 2209 Sushorn, Sushorn, Germany

Filed Aug. 29, 1973, Ser. No. 392,460

Claims priority, application Germany, Aug. 29, 1972, 2242490

Int. Cl. G01r *33/00*

U.S. Cl. 324—41 5 Claims



A system for converting a physical parameter, e.g. the proximity of a metal body to a proximity-responsive indicator, into an electrical signal (evaluation or plotting signal) comprises the aforementioned indicator whose output is supplied to a feedback control circuit and the control circuit has a regulated-value signal which is supplied to an evaluation circuit. The evaluation circuit includes a storage device or memory (e.g. a capacitor establishing the threshold of the evaluation circuit) to which the reference signal is supplied from the indicator and control circuit so that subsequent deviations from the reference value will produce an output independent of the nature and size of the body.

3,833,851

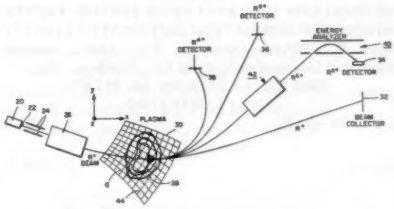
SYSTEMS FOR MEASURING THE PROPERTIES OF PLASMA WITH AN ION PROBE

Forrest C. Jobes, Jr., and Robert L. Hickok, Jr., both of Trenton, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Oct. 15, 1971, Ser. No. 189,568

Int. Cl. G01n *27/00*

U.S. Cl. 324—71 EB 5 Claims



An ion source generates a heavy-ion beam of uniform ion velocity which is utilized to probe plasmas. The beam is scanned through a plane by deflection plates and the angle of scansion for the beam is magnified by a linear field distribution lens. The ionizing collisions between the scanned beam and the plasma results in a step charge change for the ions. Detectors are provided which are responsive to the ions undergoing a step change in charge to measure electron density of the plasma, space potential of the plasma, and the momentum added by the plasma current.

3,833,852

INSPECTION HEAD MOUNTING APPARATUS

Walter K. Schoch, Maumee, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

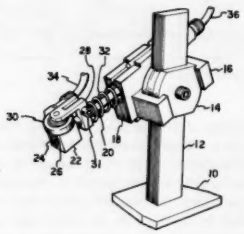
Filed Aug. 16, 1973, Ser. No. 388,815

Int. Cl. G01n *27/00*

U.S. Cl. 324—71 R 9 Claims

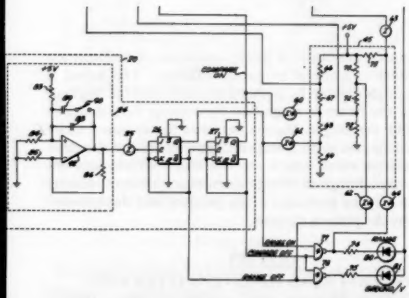
Apparatus to allow mounting of an inspection head such that its front face is parallel to and a fixed distance from an ar-

ticle to be inspected. In one type of device for measuring the thickness of dielectric articles, such as glass containers, an RF field is passed through the article and a voltage is sensed as a measure of thickness. The RF antenna and voltage probe are coaxial and coplanar in an inspection head. They both must be kept a fixed distance from the article to ensure accurate measurement. To accomplish this, the head is mounted on a tube passing through a head carrier. A swivel mechanism connects the head carrier to a main support. A stand-off roller is

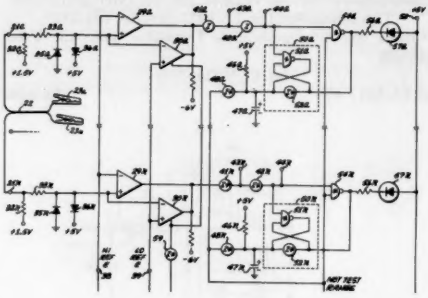


mounted adjacent the head and extending slightly beyond the head. To inspect an inclined surface, the swivel mechanism is activated to bring the face of the head carrying the antenna and probe into a parallel relationship with the inclined surface. The stand-off roller moves with the head and is therefore brought into a full contact position with the inclined surface. Thus, the antenna and probe are parallel to the surface being inspected and are maintained a fixed distance away from this surface.

3,833,853
METHOD AND APPARATUS FOR TESTING PRINTED WIRING BOARDS HAVING INTEGRATED CIRCUITS
Richard E. Milford, Oklahoma City, Okla., assignor to Honeywell Information Systems Inc., Waltham, Mass.
Filed Apr. 13, 1973, Ser. No. 351,078
Int. Cl. G01r *31/00*
U.S. Cl. 324—73 R **11 Claims**

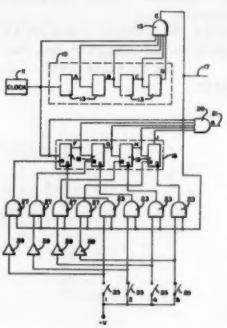


A plurality of voltage comparators are each connected to a corresponding pin of an integrated circuit on a wiring board. Each of the comparators is also connected to a sequencer which sequentially provides reference voltages to the comparators to check for shorts to ground, shorts to high voltage and incorrect signal levels at each of the pins of the integrated



circuit. This apparatus may be used to test wiring boards having a wide variety of types of integrated circuits mounted thereon.

3,833,854
DIGITAL PHASE SHIFTER
Robert W. Schonover, Endicott, N.Y., assignor to The Singer Company, Binghamton, N.Y.
Division of Ser. No. 164,688, July 21, 1971. This application Dec. 14, 1972, Ser. No. 315,050
Int. Cl. H03k *3/64*
U.S. Cl. 328—155 **6 Claims**



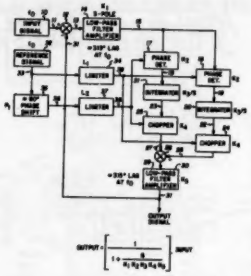
A digital phase shifter wherein pulses on one pulse train are advanced or delayed with respect to pulses on another pulse train in response to a digital command indicating the desired advance or delay. Two counters having a common clock input provide the pulse trains with the counter providing the one pulse train having means by which it may be preset by the command on occurrence of a pulse on the other pulse train. The phase shifter of this invention is particularly applicable for supplying sync commands in a system comprising a television camera and a matrix of displays on which the image generated by the camera may be selectively positioned is also shown.

3,833,855

COHERENT FILTER

Michael W. Lundgreen, Esterville, Iowa, assignor to Collins Radio Company, Dallas, Tex.

Filed Sept. 28, 1973, Ser. No. 401,779
Int. Cl. H03b 1/04
U.S. Cl. 328—167 6 Claims



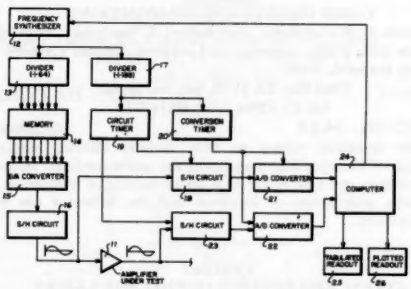
A high Q bandpass filter employing coherent techniques to synthesize the fundamental component of an input signal under control of a driving signal with frequency like that of the input signal. Enacting maintenance of amplitude and phase characteristics is realized by a feedback loop wherein the output is subtracted from the input signal.

3,833,856

APPARATUS FOR TESTING AN AMPLIFIER

Eugene R. Roeschlein, Indianapolis, Ind., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 15, 1973, Ser. No. 416,331
Int. Cl. G01r 25/00
U.S. Cl. 330—2 5 Claims



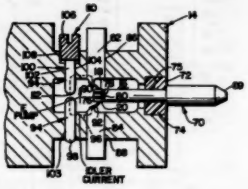
A testing device for measuring phase shift and amplitude changes in an amplifier. A frequency synthesizer provides a sine wave through first and second channels with the amplifier being connected in the first channel. The outputs from the first and second channels are applied to a computer for analysis. The computer is programmed to calculate the phase angles for the waveforms. The difference in these phase angles is the phase shift of the amplifier under test, and this difference is presented in a readout device.

3,833,857

MILLIMETER WAVE PUMPED PARAMETRIC AMPLIFIER

James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Lawrence E. Dickens, Baltimore, Md.

Filed Oct. 2, 1973, Ser. No. 402,865
Int. Cl. H03f 7/04
U.S. Cl. 330—4.9 5 Claims



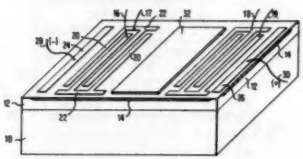
A millimeter wave parametric amplifier structure and varactor diode mounting structure therefor includes a housing within which is a pump frequency waveguiding channel and an intersecting signal frequency transmission line. The transmission line has a center conductor portion which protrudes into the pump channel. A portion of the housing forms the outer conductor of the transmission line. A pair of uncased varactor diode chips within the channel are stacked and connected in series across the wave guiding channel and are connected in parallel with respect to the inner and outer conductors of the signal transmission line. An adjustable stub means protrudes into the waveguiding channel adjacent the stacked varactor diode chips and defines a capacitive gap across the channel for series resonating the diode chips at an idler frequency. The stub means is located close to the stacked diode chips to provide a short return path for idler current generated by the diodes. The diodes, the stub means and the protruding portion of the center conductor are carried by a thin conducting wafer removably retained by the housing.

3,833,858

HIGH GAIN SOLID-STATE DISTRIBUTED INTERACTION MICROWAVE AMPLIFIER

O. P. Gandhi, and L. S. Metz, both of Salt Lake City, Utah, assignors to University of Utah, Salt Lake City, Utah

Filed June 15, 1973, Ser. No. 370,370
Int. Cl. H03f 3/04
U.S. Cl. 330—5 11 Claims

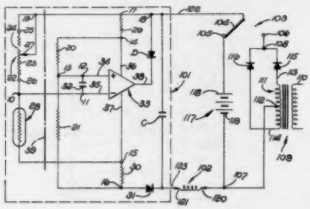


Traveling-wave amplification of microwave energy having frequencies up to 500 GHz is provided by a semiconductor (GaAs, GaP, InAs, InP) which has a thin epitaxial layer capable of exhibiting the property of negative differential conductivity. A thin resistive layer is applied on the skin of the epitaxial layer to smooth out the dc electric field profile and allow use of longer layers with a selective control of band pass and gain properties of the amplifier.

3,833,859
TEMPERATURE CONTROL SYSTEM AND THERMOSTAT THEREFOR

Elmer A. Carlson, Agoura, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Mar. 23, 1973, Ser. No. 344,070
Int. Cl. H03f 1/40
U.S. Cl. 330—69 3 Claims

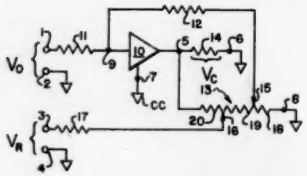


A two wire thermostat utilizing at least four resistors and a differential amplifier. The amplifier output is connected to one lead of the two wire line. One of the resistors is variable. Another is a thermistor. A first auxiliary resistor which may be employed in one power lead of the amplifier performs two functions. It provides positive feedback for a more stable regenerative snap on and off. It also makes the amplifier gain more nearly constant over an applied voltage swing of from about zero to 12 or zero to 24 volts. The applied voltage may be obtained from any source of D.C. or A.C. potential. If the source is A.C., the voltage may be a half wave or full wave rectified sine wave. A second auxiliary resistor may be employed in the other power lead of the amplifier to provide additional positive feedback to the inverting input of the amplifier. This provides a cleaner opening of the circuit when the voltage across the thermostat is low. A diode in one lead of the two wire line can perform three functions. It can provide rectification. It can also provide reverse voltage protection. Further, it can provide heat anticipation. A capacitor connected between the amplifier inputs provides some memory during off periods of a half wave A.C. cycle.

3,833,860
AMPLIFIER SYSTEM HAVING PSEUDO SUMMING JUNCTION

John Somerville Snyder, Webster, N.Y., assignor to Sybron Corporation, Rochester, N.Y.

Filed Apr. 20, 1972, Ser. No. 245,850
Int. Cl. H03f 1/36
U.S. Cl. 330—108 7 Claims

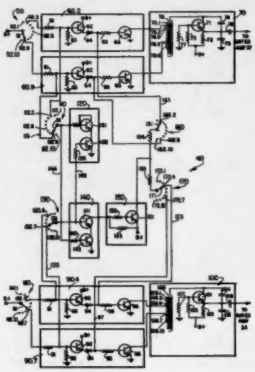


A summing amplifier system having a pseudo summing junction in a feedback network for biasing the output of the system by a DC voltage while simultaneously applying a second voltage to a conventional summing junction of the system. As a process variable controller, the system provides proportional control, the said second voltage representing deviation of the process variable, and manual reset, the said DC voltage representing a manual reset voltage.

3,833,861
SIGNAL SUBSTITUTION SYSTEM

Keith H. Wycoff, P.O. Box 308, Lexington, Nebr. 68850

Continuation of Ser. No. 75,417, Sept. 25, 1970, abandoned. This application Apr. 12, 1972, Ser. No. 243,150
Int. Cl. H03j 5/08
U.S. Cl. 331—48 38 Claims



A first selector is to be set up to cause the control tone produced by a variable frequency oscillator to have a first selected frequency. A second selector is set up to cause the control tone to have a second selected frequency. A third selector set at a third selected frequency determines which of the first or second selectors is operable to control the oscillator. The second selector is operative to cause the control tone to have the second selected frequency when the first and third selectors are set in corresponding conditions, and the first selector is operative to cause the control tone to have the first selected frequency when the first and third selectors are set in noncorresponding conditions.

3,833,862
LASER DEVICES AND COMPOSITIONS

Kenneth A. Wickersheim, and Robert A. Buchanan, both of Palo Alto, Calif., assignors to Lockheed Aircraft Corporation, Burbank, Calif.

Filed May 22, 1970, Ser. No. 39,805
Int. Cl. C09k 1/14; H01s 3/16
U.S. Cl. 331—94.5 F 6 Claims

This invention relates to laser devices utilizing single crystals of an oxysulfide material as the active medium. More particularly, the host material is an oxysulfide of lanthanum, yttrium, gadolinium or lutetium and the activator ion is neodymium.

3,833,863
STYRYL AND ARYLBUTADIENYL DYE LASERS

Frank G. Webster, and William C. McColgin, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 27, 1971, Ser. No. 212,654
Int. Cl. H01s 3/00
U.S. Cl. 331—94.5 7 Claims

Styryl and arylbutadienyl dyes are useful as laser dyes. These dyes are used in solution with a non-interfering solvent to form lasing media useful in dye lasers. Such lasers generally include a reservoir for containing the laser dye solution and a pumping energy source operably associated therewith for producing stimulated emission of the laser dye solution.

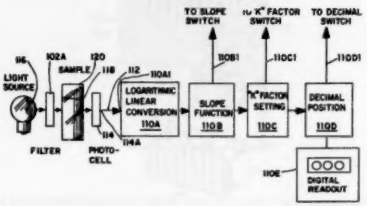
3,833,864
DIGITAL DIRECT READING COLORIMETER

Raymond W. Kiess, and Peter H. Stewart, both of 8768 S.W. 131st St., Miami, Fla. 33156

Continuation-in-part of Ser. Nos. 113,881, Feb. 9, 1971, Pat. No. 3,676,007, and Ser. No. 224,457, Feb. 8, 1972, Pat. No. 3,676,007, said Ser. No. 224,457, is a continuation-in-part of Ser. No. 113,881, , which is a continuation-in-part of Ser. No. 692,525, Dec. 21, 1967, Pat. No. 3,561,878. This application Nov. 30, 1972, Ser. No. 310,771

Int. Cl. G01j *3/50, 3/48*

U.S. Cl. 356—184 **12 Claims**



A combined blood constituent and prothrombin time analyzer is provided in which a plurality of removable and replaceable circuit modules are utilized to program the analyzer for appropriate light wavelength, reagent blank offset, scale factos and calibration parameters and which is self referencing to predetermined standards such that the results derived are all normalized for readout on a common digital readout device. The entire analyzer is contained in a compact console which includes controlled incubated storage for blood test samples together with insertion cavities for both constituent concentration and prothrombin time analysis. The results of each analysis are so normalized by the blood analyzer that a common digital counter can be used to convert these results to a numerical readout presentable on a common readout device and said results are substantially instantaneously displayed subsequent to initiation of any given test in the analyzer.

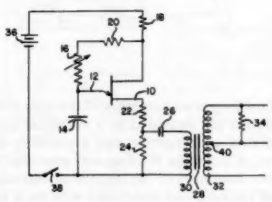
3,833,865
HEART SIMULATOR

Euple I. Palmer, Rt. 3, Box 51, Huntsville, Ala. 35806

Filed Aug. 27, 1973, Ser. No. 391,712

Int. Cl. H03b *5/12*

U.S. Cl. 331—117 R **4 Claims**



An electronic circuit which generates an electric waveform which is similar to that produced by the human heart. The circuit simulates the heart pulse rate over a range of approximately 40–200 pulse beats per second. A unijunction transistor oscillator generates pulses at a rate determined by the setting of a potentiometer and the pulses are shaped to simulate a heart beat by a transformer - RC circuit coupled to the oscillator output.

3,833,866
MICROWAVE SWITCHING MATRIX

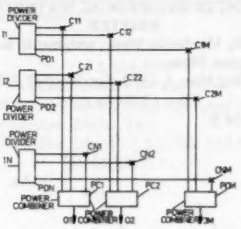
Paul Boutelant, Sceaux, France, assignor to International Standard Electric Corporation, New York, N.Y.

Filed July 20, 1973, Ser. No. 381,290

Claims priority, application France, Aug. 7, 1972, 72.28414

Int. Cl. H01p *1/10;* **H04q** *1/18*

U.S. Cl. 333—7 D **16 Claims**



An $m \times n$ microwave switching matrix is disclosed including orthogonally related microwave transmission lines which may be interconnected by an appropriate number of microwave type switching diodes, such as PIN diodes. According to several disclosed embodiments a different power divider is coupled to each matrix input, each of said power dividers having n outputs, and a different power combiner is coupled to each matrix output, each of said power combiners having m inputs. The outputs of any given power divider are connected to one input of each power combiner by n crosspoints including PIN diodes. Arrangements are also disclosed to equalize path lengths and impedances of the disclosed matrices.

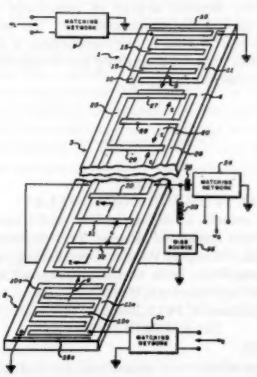
3,833,867
ACOUSTIC SURFACE WAVE CONVOLVER WITH BIDIRECTIONAL AMPLIFICATION

Leland P. Solie, Acton, Mass., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Oct. 23, 1973, Ser. No. 408,694

Int. Cl. H03h *9/26;* **H01v** *7/00;* **H03f** *13/00*

U.S. Cl. 333—30 R **10 Claims**



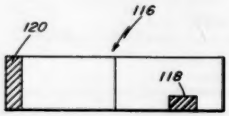
Apparatus for the convolution of two input signals introduced at opposite ends of an acoustic surface wave

propagation medium provides amplification of the two oppositely propagating signals and their integration in an intermediate semiconductor film cooperating with a contiguously overlying electrode pattern serving both as the signal output transducer and for coupling unidirectional electrical bias fields for amplifying the convolved output.

3,833,868
DUAL BALANCED RECIPROCAL WAVEGUIDE PHASE SHIFTER

Alfred E. Booth, Marlboro, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Mar. 1, 1973, Ser. No. 337,255
Int. Cl. H01p 1/18
U.S. Cl. 333—98 R **1 Claim**



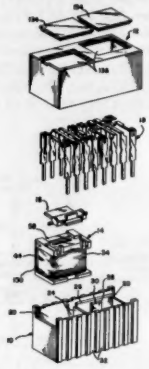
A phase shifter for balanced dual waveguide systems is disclosed for high power broad frequency range applications. An increment in electrical length is provided which is reciprocal for any dual balanced network including TR and ATR electron discharge devices or nonreciprocal differential ferrite phase shifters utilized as isolators or circulators. A dual waveguide structure is provided in one section with dielectric loading means to reduce the guide wavelength and increase the phase length while the abutting waveguide section is provided with means for reduction of the waveguide width to increase guide wavelength and decrease phase length. The first means comprises a member of a dielectric material such as aluminum oxide and the second means comprises a conductive plate member. The desired performance characteristics with the addition of the balanced reciprocal phase shifter means are attained over, illustratively, a relatively broad frequency band of approximately 40 percent. Balanced systems including short slot hybrid and magic T hybrids, as well as directional couplers together with nonreciprocal differential phase shifters or dual gas switching tubes are readily provided with any desired degree of additional reciprocal phase shift. In an illustrative embodiment the incremental reciprocal phase shift means is provided within a differential ferrite phase shifter without disturbing the overall mechanical symmetry of the system packaging.

3,833,869
ELECTROMECHANICAL RELAY

James William Cassarly, Lewisberry; Norwood Claude Graeff, Harrisburg; Dean Roosevelt Hooper, Jr., Middletown; William Vito Pauza, Palmyra; Wilmer Lee Sheesley, and Frank Christian Youngfleish, both of Harrisburg, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Nov. 9, 1973, Ser. No. 414,464
Int. Cl. H01h 50/54
U.S. Cl. 335—106 **2 Claims**

This invention relates to a electromechanical relay having one or more double pole double throw switching subassemblies in a "dual-in-line" package. More specifically, the relay in its simplest form contains a motor subassembly driving a overlying armature which in turn moves a double leaf switch arm from one contact to another. The double leaf switch arm, pins, contacts, armature dampener arms and coil connections

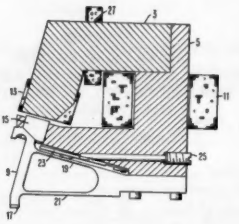


are stamped and formed from a single coplanar sheet of conductive material in the orientation of that of their positions in the assembled relay.

3,833,870
PRINT HAMMER FIRING CIRCUIT

Leonard J. Wallace, Vestal, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 15, 1973, Ser. No. 406,722
Int. Cl. H01f 7/18
U.S. Cl. 335—268 **6 Claims**

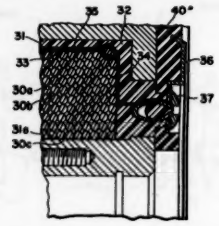


A circuit for firing print hammers of the type in which a plurality of hammers are provided in a magnetic core structure having a common yoke portion and a plurality of individual yoke portions. A common holding coil provides holding flux for holding the hammers in the normal or retracted position. An individual bucking coil associated with each hammer provides an impulse of bucking flux for overcoming the holding flux and causing the hammer to fire under spring tension, whereafter the holding flux restores the hammer to its retracted position. A proportional coil or winding, linked to the common portin of the magnet yoke, is connected so that the sum of the hammer firing currents in the bucking coils flows through the proportional coil or winding. This flux cancels out the effects of flux induced by the bucking flux in adjacent individual magnetic yokes, and thereby reduces hammer flight time variations.

3,833,871
COIL CONNECTIONS FOR AN ELECTROMAGNETIC DRIVE

Ferdinand W. Fisher, and Clifton D. Sweet, Jr., both of Harrodsburg, Ky., assignors to Eaton Corporation, Cleveland, Ohio

Filed Nov. 19, 1973, Ser. No. 417,457
Int. Cl. H01f 5/04
U.S. Cl. 335—282 **6 Claims**

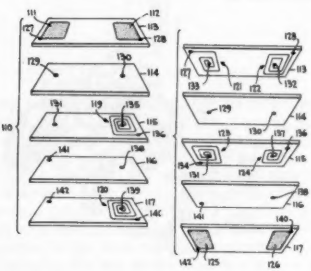


An electromagnetic drive has a uniquely mounted electric coil located within an annular recessed member of the electromagnetic drive to electrically ground the coil to the recessed member along the inner periphery of the coil. A power lead is ultrasonically welded to an insulated outer lead wire of the electric coil so as to have the power lead angularly contact the conductive portion of the lead wire. Energization of the coil by a current passing from the lead wire to the grounded coil produces an electromagnetic field which controls the application of torque between a driving member and a driven member of the electromagnetic drive. The method of mounting the electric coil includes a step wherein the coil is interference pressed onto the annular recessed member in a manner which removes the electrical insulation from the radially inner windings of the coil to electrically ground the coil to the recessed member.

3,833,872
MICROMINIATURE MONOLITHIC FERROCERAMIC TRANSFORMER

Ira R. Marcus, 5004 Jasmine Dr., Rockville, Md. 20053, and William L. Muckelroy, P.O. Box 9685, Washington, D.C. 20016

Filed June 13, 1972, Ser. No. 262,406
Int. Cl. H01f 17/04
U.S. Cl. 336—83 **11 Claims**

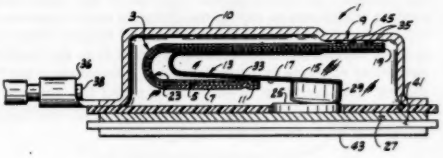


A monolithic microminiature transformer element comprising at least two separate contiguous windings of conductive metal film, each having an interconnecting magnetically permeable core of refractory material, immersed in a rectangular block of stratified refractory material. The element is a contiguous mass of ceramic material, especially alumina, primary and secondary transformer windings formed by printing or photoetching loops on a rectangular piece of ceramic sheet. A method for making this transformer element wherein paths of conductive material are deposited onto thin unsintered magnetically permeable ceramic sheet with holes for interconnection therein to form windings of said transformer and wherein said holes are aligned and said sheets are laminated such that upon sintering said metal forms a contiguous conductive path and provides a primary or secondary winding for said transformer, and wherein said path is immersed in a contiguous block of ceramic.

3,833,873
THERMAL PROTECTOR

Walter H. Moksu, Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 14, 1973, Ser. No. 425,034
Int. Cl. H01h 61/06
U.S. Cl. 337—85 **15 Claims**



A thermal protector comprising two generally U-shaped strips of bimetal nested one within the other. The first bimetal strip has the layer with the lower coefficient of thermal expansion on the inner surface thereof and has a fixed end and a free end. The second strip of bimetal is nested within the first strip and has the layer with the higher coefficient of thermal expansion on the inner surface thereof with one end secured to a first electrical terminal. The second strip has a thermal force somewhat less than that of the first strip. The free end of the second strip extends outwardly beyond the free end of the first strip and is in physical contact therewith but electrically insulated therefrom. A first electrical contact is secured to a second electrical terminal. A second electrical contact is carried on the free end of the second bimetal strip and projects from the lower expansion layer thereof and is movable toward and away from engagement with said first electrical contact. The nested U-shaped strips are positioned relative to the first contact so that the second contact is in engagement therewith at temperatures below a preselected level. Upon current flow through the second strip exceeding a level that will heat the strips above the preselected temperature level, the first strip will flex to cause initial separation of the contacts and the resulting termination of current flow through the second strip will cause it to cool and flex rapidly to increase the contact separation thereby to effect rapid contact separation under overtemperature conditions of the thermal protector.

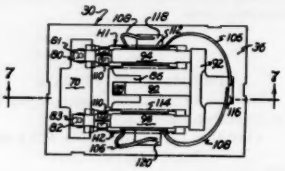
3,833,874
LIQUID LEVEL INDICATING SYSTEM

Leo Marcoux, Rehoboth, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 159,894, July 6, 1971, Pat. No. 3,760,352.
This application Apr. 2, 1973, Ser. No. 347,118
Int. Cl. H01h 71/22
U.S. Cl. 337—100 **2 Claims**

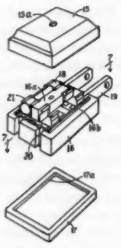
One or more liquid level sensors in the form of positive temperature coefficient (PTC) of resistivity elements suspended in probes are mounted in a fluid reservoir. The elements, electrically connected in a circuit, are either in a low or high resistance mode. When the elements are in a low resistance

mode sufficient current passes through respective heaters to cause respective heat responsive, normally closed, switches connected to a liquid level indicator, to open. Initially upon energization of the system, the PTC elements are in the low resistance mode and the indicator is actuated until the switches receive sufficient heat to cause them to open. The PTC elements remain in the low resistance mode as long as the liquid level remains above the elements permitting heat generated in



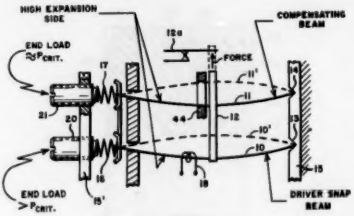
the elements to be dissipated; however, if the liquid level recedes sufficiently to expose the elements their temperature will rise until an anomaly point is reached beyond which resistance rapidly increases shutting off current to the heaters, permitting reclosing of the switches and reactuation of the indicator. The invention is particularly suited for use with a master cylinder of a vehicle as an indicator of an insufficient quantity of brake fluid in the braking system.

3,833,875
FUSE RECEPTACLE
Alexander Holoka, 417 N. Clark St., Chicago, Ill. 60610
Filed Dec. 7, 1972, Ser. No. 313,125
Int. Cl. H01h *85/02*
U.S. Cl. 337—269 **9 Claims**



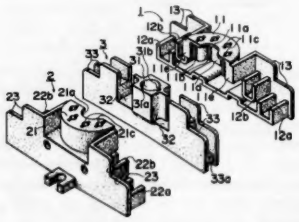
A fuse receptacle, an electrical fuse holder device in the form of a small plastic case which can be safely handled and with a removable cover to provide access to the fuses, also with a pair of standard external metal plug contacts on one end of the case, called front end, and a pair of internal metal receptacle contacts enclosed in the other end and which same contacts are so positioned in the main body of the plastic case that a pair of standard plug contacts similar to same on the front end can be inserted through access slots in the case into contact with the internal receptacle contacts. The external and internal conductors on each side can be eletrically connected inside the case by a fuse placed in fuse clips attached to the top of each of the conductor parts.

3,833,876
TEMPERATURE COMPENSATED SNAP-BEAM ACTUATOR
William W. Bassett, Wayzata, Minn., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Nov. 21, 1973, Ser. No. 417,862
Int. Cl. H01h *37/10*
U.S. Cl. 337—370 **17 Claims**



A snap acting thermal actuator apparatus and more particularly a temperature compensated snap beam actuator, one embodiment disclosing a snap beam thermal sequencer. The thermal electric snap beam actuator apparatus is operable to either of two retained positions dependent on the temperature of the thermal snap beam element. The bimetal snap beam element is ambient temperature compensated by another bimetal beam. The end loading of the compensator beam is less than that of the snap beam, the compensator beam end loading preferably being barely equal to the buckling force of the beam, at which point the compensator beam presents a constant force at all displacement positions within the operating range and thus does not load down the snap beam. The compensated snap beam is also disclosed in multiple in a sequencer switch arrangement. The plurality of snap beams are heated together and by biasing the snap beams with end loads differing from each other they will be caused to operate at different operating points, such as in sequential action.

3,833,877
SOCKETS
Teizo Fujita, and Masao Kikuchi, both of Osaka, Japan, assignors to Izumi Denki Company Limited, Osaka, Japan
Filed Dec. 29, 1972, Ser. No. 319,263
Claims priority, application Japan, Mar. 10, 1972, 47-25119
Int. Cl. H01r *13/64, 33/76*
U.S. Cl. 339—186 M **3 Claims**



A socket having a circular bed, which consists of two separable sections put together into a unitary body with a separator interposed therebetween, each of said sections having electrical connecting parts fitted therein before it is put together with the other section.

3,833,878

DEVICE FOR ELECTRICALLY CONNECTING THE ENDS OF ELECTRICAL CONDUCTORS

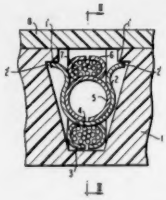
Norbert Kinast, Stuttgart, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Germany

Filed May 3, 1972, Ser. No. 249,774

Claims priority, application Germany, May 4, 1971, 2121841

Int. Cl. H01r *13/50*

U.S. Cl. 339—208 10 Claims



A device for making an electrical connection between the ends of electrical conductors by means of contact elements which can be embedded in at least one insulating member; one contact element consists of a preferably longitudinally slotted sleeve whereas the second contact element, into which the sleeve-like first contact element is adapted to snap in perpendicularly to its longitudinal direction, consists of an expanding spring which is shaped in the manner of a lyre and which in its turn is snapped into the insulating member in a barb-like manner.

3,833,879

CONTACT SOCKET FOR ELECTRICAL DEVICES, SUCH AS RELAYS

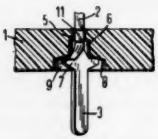
Martin Aidn, and Gerhard Furtwa-Ngler, both of Munich, Germany, assignors to Seimens AG, Berlin & Munich, Germany

Filed Apr. 12, 1973, Ser. No. 350,317

Claims priority, application Germany, Apr. 17, 1972, 2218501

Int. Cl. H01r *9/08*

U.S. Cl. 339—220 R 5 Claims



A contact socket for electrical devices including a base member made from insulating material and having an opening in the form of an elongated window opening to one side of the base member and leading to an enlarged diameter chamber opening to the opposite side of the base member. The chamber terminates into a reduced diameter neck portion leading along a portion of the window for receiving a narrowed neck of a contact member. The contact member has a widened portion longer than the elongated window and has a shoulder engaging the top of the base member, a narrower portion fitting in the elongated window and a connecting portion leading from the narrower portion. A pair of wings extend radially from the connecting portion beneath the narrower portion. The enlarged diameter chamber has oppositely inclined top surfaces converging to an apex. When the contact member is inserted in the socket through the window with the shoulder abutting the top of the base, the wings will lie along the apex of the chamber and, as twisted, will engage the inclined surfaces of the top wall of the chamber and be cammed thereby to tighten the contact member in the window and bring the shoulder in firm engagement with the top of the base. An insulating compound can be inserted into the chamber to seal the window and the solder side of the contact member.

3,833,880

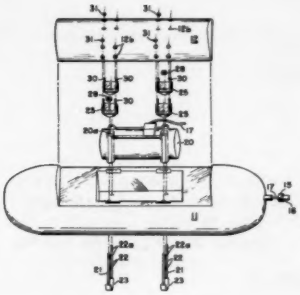
VERY LOW FREQUENCY SONAR PROJECTOR

Frank R. Abbott, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 26, 1973, Ser. No. 335,640

Int. Cl. H04b *13/00*

U.S. Cl. 340—8 R 5 Claims



A low-cost projector of acoustic energy is fabricated from an elongate block of wood provided with a cavity. A cover, also made of wood, is fitted over the cavity and a motor-driven rotary electric vibrator is secured to the elongate block via a plurality of bolts. The wooden cover is coupled to the vibrator by several resilient vibration isolation mounts and the block and cover are encased in a resilient sleeve clamped at opposite ends. Thusly constructed and additionally provided with a coaxial duct through which the towing and power cables reach, a low-cost, high-energy projector of acoustic energy is provided which is capable of being operated at very low frequencies due to the selectivity of vibrator driving speeds and of the stiffness of the resilient vibration mounts.

3,833,881

STREET TRAFFIC SIGNAL SYSTEM

Peter Drebinger, and Gerd Pfeffer, both of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed May 26, 1972, Ser. No. 257,257

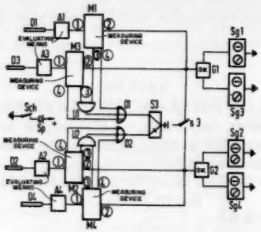
Claims priority, application Germany, Sept. 30, 1971, 2148889

Int. Cl. G08g *1/08*

U.S. Cl. 340—31 A 17 Claims

A street traffic signalling system having signal units disposed at the respective sides of an intersection and controllable in response to traffic detectors also disposed at the sides of such intersection, a measuring device being provided for each traffic flow monitored by a traffic detector, with each measuring device being adapted to evaluate and store criteria representative of the occupied or unoccupied condition of the associated detector, and to effect a signal change when predetermined occupied-unoccupied conditions exist representing an optimum period duration, or when the occupied periods reach a

magnitude representing traffic congestion. The respective measuring devices may be so coupled that related traffic flows



are controlled in dependence upon optimum conditions at all flows so related, or when congestion is indicated with respect to any one such flow.

3,833,882

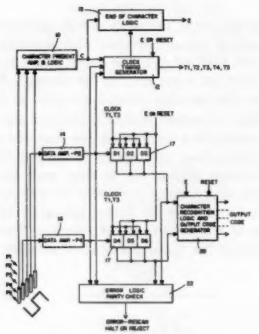
CHARACTER READING SYSTEM

John W. Busby, Newtown, Pa., assignor to Busby Venture Corporation, Newton, Pa.

Filed Apr. 28, 1972, Ser. No. 248,566

Int. Cl. G06k 9/10

U.S. Cl. 340—146.3 J **7 Claims**



A stylized character reading system in which timing is effectuated by "self-clocking" on the characters themselves thereby eliminating the need for precise horizontal placement of the characters as required by systems in which separate clocking tracks or edge of document detectors are used and in which clock pulses are related to paper movement. In a preferred embodiment three sensors are used as character present sensors which read horizontal line portions of the characters and are used solely to detect the presence of a character. Two data sensors are used to detect vertical marks in the characters and send pulses to the input data register for character identification. The system further comprises a reader which includes the sensors, a self-clocking timing generator, end-of-character logic, even parity checker and a six-bit character code storage register with code recognition logic which may be coupled with code conversion logic to generate any appropriate machine language code.

3,833,883

THRESHOLD FORMING CIRCUIT

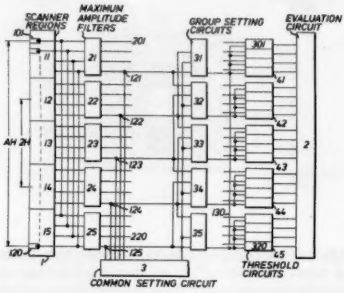
Gerhard Haupt, and Wilfried Kochert, both of Konstanz, Germany, assignors to Licentia Patent-Verwaltungs-GmbH, Frankfurt, Germany

Filed Mar. 23, 1973, Ser. No. 344,150

Claims priority, application Germany, Mar. 25, 1972, 2214658

Int. Cl. G06k 9/00

U.S. Cl. 340—146.3 AG **8 Claims**



A threshold forming circuit for use in a character recognition system includes a plurality of scanners and associated signal processing channels, arranged in scanning groups. Threshold values are produced for use in evaluating the signals in each of the processing channels. The threshold values are generated by a signal processing circuit in dependence upon the scanning signals. The signal processing circuit includes a plurality of processing units, where there is one such unit associated with each scanning group. Each unit includes a maximum amplitude filter which is connected to each of the signal processing channels of the respective group and generates an output signal dependent upon the highest scanning signal in the group. A group threshold setting circuit is connected within each of the units to the maximum amplitude filter and produces a threshold value which is dependent upon the signal from its associated maximum amplitude filter and the signals generated by the filters of the other scanning groups. This threshold value is then utilized in a threshold circuit for assisting in the evaluation of the signals on the processing channels.

3,833,884

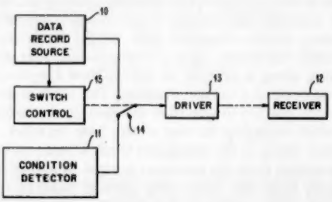
BADGE OR CREDIT CARD READING SYSTEM WITH INTEGRAL STATUS MONITORING

Samuel E. Bigbie, Boynton Beach, and Roger C. Hull, Boca Raton, both of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 25, 1973, Ser. No. 373,591

Int. Cl. H04q 5/00

U.S. Cl. 340—147 LP **6 Claims**



A high priority source of discrete data records shares a common transmission line with a source of low priority random

data. Logic circuitry maintains a normal connection between the low priority data source and the communication line until receipt of an indication that the higher priority data record is about to appear. The logic circuitry disconnects the low priority data source, connects the higher priority source to the common line and allows the high priority connection to be maintained until either an end of record signal is received or a period of time has passed of sufficient length so that the maximum data record must have been transmitted.

3,833,885

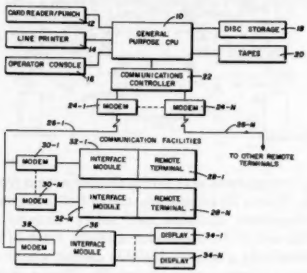
AUTOMATIC BANKING SYSTEM

Fred J. Gentile, and Jack Chu-Wang Chang, both of Dallas, Tex., assignors to Docutel Corporation, Dallas, Tex.

Filed May 24, 1973, Ser. No. 363,665

Int. Cl. H04q *5/00*

U.S. Cl. 340—152 R **24 Claims**



Acentral processing unit coupled to one or more remote automatic dispensing terminal banking machines provides fully automatic stations for completing banking functions in response to a coded credit card presented to any one of the remote dispensing stations. After the credit card presented to one of the remote terminals has been initially checked to determine if the card has the proper format, coded information thereon is evaluated to check the users identity prior to authorizing them to complete a selected banking transaction. When each of several standard checks of the credit card code have been completed, a user is instructed to enter a transaction selection, comprising one of four banking functions, along with the amount of the banking transaction. At this point the remote terminal assembles an authorization request message and, upon receipt of a poll command from the central processing unit, transmits this inquiry message to a central computer. The central computer interrogates account files as appropriate and replies by transmitting an authorization reply message to the remote terminal. An authorization code included in this message by the central computer instructs the remote terminal how to complete the selected transaction. Following completion of the selected transaction, the remote terminal assembles a completion status message, and upon receipt of a poll command from the central processing unit, transmits this completion message to the central computer. Communications between the central processing unit and each of the remote terminals is thus completed only upon a poll command from the central computer.

3,833,886

REMOTE CONTROL WITH SELECTIVE EVALUATION OF IMPULSE PATTERNS

Eduard Baumann, Uster, Switzerland, assignor to Zellweger Ltd., Uster, Switzerland

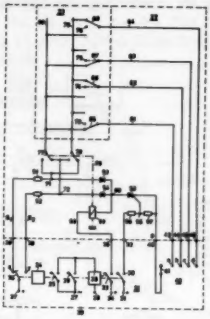
Filed Mar. 24, 1972, Ser. No. 237,835

Claims priority, application Switzerland, Mar. 29, 1971, 4608/71

Int. Cl. H04q *9/00*

U.S. Cl. 340—167 R **1 Claim**

A receiver programmed to respond to either an individual command impulse pattern or to an individual command and a collective command impulse pattern. This is accomplished by opening two links in the command key so that the receiver is responsive both to the individual command and a collective



command. In this state, both received commands would match the impulse pattern associated with the receiver. When these two links are closed, the receiver is only responsive to the individual commands.

3,833,887

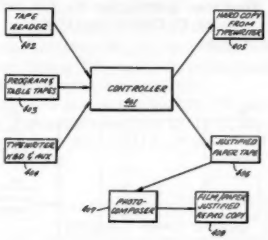
PROGRAMMABLE CONTROLLER

Robert Shevlin, Manhasset, N.Y., assignor to Varisystems Corporation, Plainview, N.Y.

Division of Ser. No. 235,202, March 16, 1972. This application Oct. 30, 1972, Ser. No. 302,295

Int. Cl. G06f *9/00, 3/00*

U.S. Cl. 340—172.5 **3 Claims**



A programmable controller for use in controlling a wide variety of external data and production devices and having an extremely flexible stored program capability enabling the device to function as a small-scale computer adapted for use as either a systems controller or as a "stand alone" minicomputer.

3,833,888

GENERAL PURPOSE DIGITAL PROCESSOR FOR TERMINAL DEVICES

John P. Stafford; Allen B. J. Cuccio, both of Oklahoma City, Okla., and Arthur Johnson, Syracuse, N.Y., assignors to Honeywell Information Systems, Inc., Waltham, Mass.

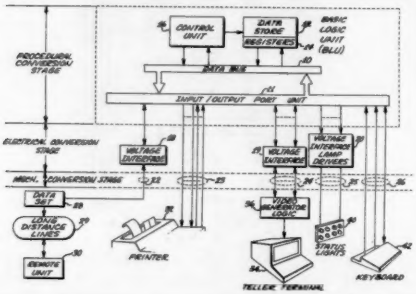
Filed Feb. 5, 1973, Ser. No. 329,513

Int. Cl. G06f *9/18*

U.S. Cl. 340—172.5 **9 Claims**

A digital processor includes: a main read only memory store providing instruction and constant data signals; a random access memory store for storing variable data signals; an input/output port unit communicating with the terminal devices; an interrupt address generator controlling the interrupt priori-

ty for the terminal devices; an arithmetic and logical unit; an instruction decoding and execution unit controlled according to instructions in a fast access read only memory store address controlled by the instruction signals in the main read only memory store for controlling the operations of the digital



processor; and a group of working and general registers for buffer storage of digital signals. Interconnections between the units of the processor are through a single bidirectional data bus. Process steps control the operation of the processor according to an instruction format.

3,833,889

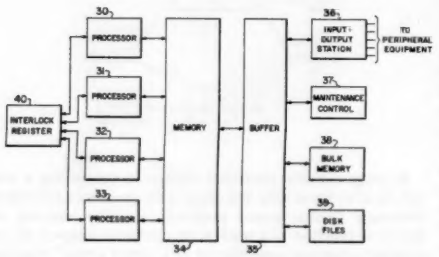
MULTI-MODE DATA PROCESSING SYSTEM

Seymour R. Cray, Chippewa Falls, Wis., assignor to Control Data Corporation, Minneapolis, Minn.

Filed Mar. 8, 1973, Ser. No. 339,237

Int. Cl. G06f *9/20, 15/16*

U.S. Cl. 340—172.5 **73 Claims**



A computer system according to the present disclosure includes a plurality of individual processors and an interlock register connected to the processors for process control independent of memory. One aspect of the disclosure resides in a "universal" register technique and apparatus wherein the main registers of each processor are selectively operated in a plurality of modes. Another aspect of the disclosure resides in an addressing technique and apparatus wherein a reference address of an object program is selectively added to addresses of programs inside and outside of the field length of the object program to obtain the absolute address of the program. Absolute addresses of resident programs, however, are handled by not adding the reference address to the resident program address.

3,833,890

SAFETY DEVICE

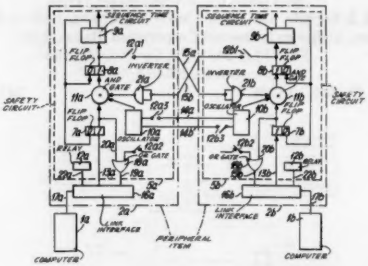
Christian Yves Tournier, Paris, and Jean Marie C. S. Buzy-Debat, Ville D'Avray, both of France, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Mar. 14, 1973, Ser. No. 341,183

Claims priority, application France, Mar. 17, 1972, 72.09415

Int. Cl. G06f *11/06;* **G05b** *9/02*

U.S. Cl. 340—172.5 **6 Claims**



A safety arrangement that avoids double access from paired duplicated circuits to commonly controlled equipment. The safety arrangement includes two safety circuits each associated with one of the duplicated circuits. Each of the safety circuits comprising a seizure bistable circuit whose output is connected to a priority arrangement. The output of the priority arrangement is connected to an operation bistable circuit. The priority arrangement is driven by one of two synchronized oscillators one in each safety circuit associated with duplicated circuit, the two oscillators operating in phase opposition.

3,833,891

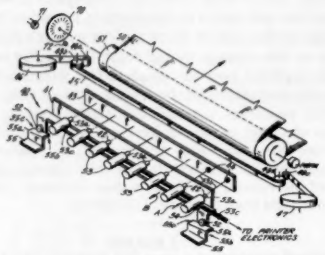
HIGH SPEED MATRIX PRINTER

Robert Howard, Roslyn, N.Y., and Prentice I. Robinson, Hudson, N.H., assignors to Centronics Data Computer Corp., Hudson, N.H.

Continuation of Ser. No. 204,024, Dec. 2, 1971, abandoned. This application Mar. 26, 1973, Ser. No. 345,000

Int. Cl. B41j *1/16;* **G06k** *15/10*

U.S. Cl. 340—172.5 **12 Claims**



An elongated paper document is moved at a substantially constant speed. A plurality of reciprocally mounted solenoid operated print wires are mounted at spaced intervals upon a movable assembly arranged to move along a line transverse to the direction of movement of the paper document. The print wires are selectively operated to impact an inked ribbon against the paper document for printing and/or plotting. The moving assembly fully compensates for the movement of the document to assure that all dots printed along a single row will

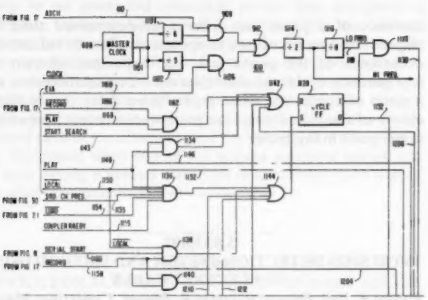
form a straight line. While only selected ones of the print wires need be operated at any given instant, those selected for operation are all driven against the inked ribbon simultaneously to provide high speed printing and/or plotting of the dot matrix type.

Alternatively, paper movement may be periodic as opposed to continuous.

3,833,892
MAGNETIC TAPE DATA SYSTEM

Joseph P. Marsalka, Columbus, and Charles F. Spademan, Worthington, both of Ohio, assignors to MI2, Inc., Columbus, Ohio

Division of Ser. No. 123,187, March 11, 1971, Pat. No. 3,774,156. This application Sept. 10, 1973, Ser. No. 395,545
Int. Cl. G06f *1/04*
U.S. Cl. 340—172.5 **6 Claims**



There is disclosed a data handling system including input-output means, intermediate memory means and principal memory means, together with data transfer and processing control logic. Input and output parallel to serial and serial to parallel and code conversion capability are provided. Input-output temporary storage capability is provided by a shift register. The intermediate memory is a random access memory or the like having a storage capacity substantially exceeding that of the input-output shift register. The principal memory is a magnetic tape system, preferably employing a magnetic tape cassette as a memory medium. The system is useable in various ways, for example as a data terminal capable of local keyboard and/or remotely controlled data storage and transmission. Data input and output may be in parallel or serial form and a variety of data rates and data code word may be acoommodated without system modification.

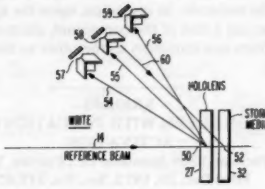
Broadly stated, for operation in the record mode, the system accumulates a block of data provided by a data source (for example a line of print) in the intermediate memory through the input-output means, and thereafter transfers the entire data block to the principal memory at a high speed. For playback, an entire block of data is transferred at high speed from the principal memory into the intermediate memory and is thereafter provided through the input-output means to suitable data utilization devices at a data rate compatible with such devices.

Among the features provided by the system are error checking and correction on a character-by-character and data block basis, data block identification (search) based on selectable identifying code characteristics and compatibility with a variety of keyboard controlled devices or other data input and output devices, and automatic and manual data gathering and processing machinery.

3,833,893
HOLOGRAPHIC MEMORY INCLUDING CORNER REFLECTORS

Jan Aleksander Rajchman, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 24, 1972, Ser. No. 299,771
Int. Cl. G11c *13/04*; G11b *7/00*
U.S. Cl. 340—173 LM **10 Claims**

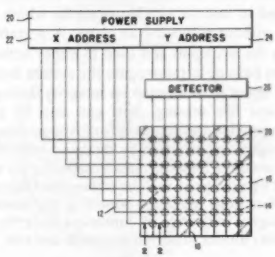


An electrically and optically accessible memory is disclosed in which binary information is stored in a holographic storage medium with a relatively high packing density by an organization in which lenses are eliminated and corner reflectors are used. A laser beam is directed to an illumination hologram to illuminate an array of controllable corner reflectors each of which reflects to represent a "1" and does not reflect to represent a "O". The reflected light returns as an object beam through the illumination hologram to the storage medium, where it interferes with laser light transmitted through the illumination hologram as a reference beam to form a hologram in the storage medium. The stored information is read out by directing the laser beam through the illumination hologram to the storage medium as a reference beam to cause the stored hologram to be read out through the illumination hologram to photosensors associated with the corner reflectors.

3,833,894
ORGANIC MEMORY DEVICE

Arieh Aviram, Yorktown Heights, and Philip E. Seiden, Briarcliff Manor, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 258,639, June 1, 1972, abandoned. This application June 20, 1973, Ser. No. 371,788
Int. Cl. G11c *13/00*
U.S. Cl. 340—173 R **18 Claims**



The organic memory device described herein comprises an organic compound having a molecular structure which includes a mixed valence double well of an organic or organometallic redox couple separated by a σ, i.e., a non-conjugated bridge, the two components of the redox couple being the respective end groups of the structure. The remainder of the molecule is chosen to effect electro-neutrality. The total molecular structure is such that in a film of the compound laid down on a substrate surface, the molecules assume dispositions such that their long axes are substantially perpendicular

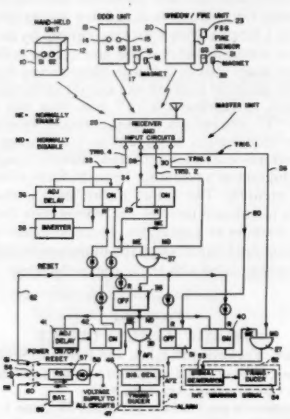
to the plane of the surface. Examples of the redox couple are: ferrocene, ferrocenium ; hydroquinone, quinone, tropylidine, tropylium ; and dihydropyridine, pyridinium . This type of molecular structure exhibits a potential energy versus distance plot, wherein the term "distance" signifies the length of the molecule, i.e., from end group to end group of the redox couple, which defines first and second minimum potentials or wells separated by a maximum potential, the distance between the wells substantially corresponding to the length of the molecule. In operation, upon the application of a potential across a film of the compound, electrons are caused to tunnel from one minimum to the other to thereby define a given state.

3,833,895

INTRUSION ALARM WITH INDICATION OF PRIOR ACTIVATION

Dennis E. Fecteau, 9308 Hamilton Dr., Fairfax, Va. 22030

Filed Dec. 29, 1972, Ser. No. 319,679
Int. Cl. G08c *17/00*
U.S. Cl. 340—224 **5 Claims**



An alarm system including a sensing device for determining the status of a door and for transmitting a wireless signal to a receiver unit when the door is opened. The door unit can also be operated to initiate a delay mode by which the occupant can leave without activating an alarm. A portable unit can be carried by the occupant and used to either activate the alarm to summon help or to interrogate the system from without the protected space to determine its integrity during his absence. Window and fire sensing units can also be provided. The receiver is provided with means for distinguishing between the different signals transmitted by the hand-held and other units and also includes logic circuits responsive to trigger signals generated by receipt of various transmitted signals to perform different functions including sounding the alarm, sounding a different signal indicative of continued integrity, resetting, initiating delay modes to permit entrance and exit.

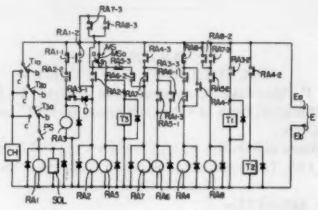
3,833,896

DEVICE FOR DETECTING A TRANSPORT MISHAP OF A COPY PAPER IN A REPRODUCING APPARATUS

Motoyuki Suzuki, Tokyo, Japan, assignor to Ricoh Co. Ltd., Tokyo, Japan

Filed Dec. 26, 1972, Ser. No. 318,356
Claims priority, application Japan, Dec. 28, 1971, 46-373
Int. Cl. G08b *21/00*
U.S. Cl. 340—259 **5 Claims**

In a reproducing apparatus, a delay timer operates an alarm after the lapse of a predetermined period during which a copy paper fails to pass a point in its travel path through the machine. This timer is placed in the operating condition by a signal which is generated when the transfer drum begins to rotate. When the copy paper has been transported normally within a particular time, the operation mode is released. However, when the copy paper is not discharged owing to the occurrence of a paper jam after a predetermined time has elapsed, the timer is caused to operate an alarm to indicate the occurrence of the paper jam. For apparatus wherein the reproduction cycle is shorter than the transportation time and a series of copies are to be made, three delay timers with a system of associated relays are presented to detect a paper jam at any point in the cycle.

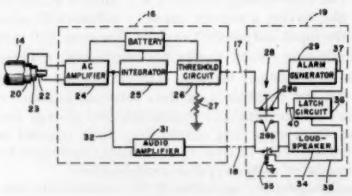


3,833,897

INTRUSION DETECTION SYSTEM AND METHOD USING AN ELECTRET CABLE

Robert F. Bell, Saratoga; James R. Dinger, Cupertino; Marvin D. Laymon, Milpitas, and Vytautas V. Pazemenas, Sunnyvale, all of Calif., assignors to GTE Sylvania Incorporated, Mountain View, Calif.

Filed Mar. 13, 1973, Ser. No. 340,849
Int. Cl. G08b *13/02*
U.S. Cl. 340—261 **8 Claims**

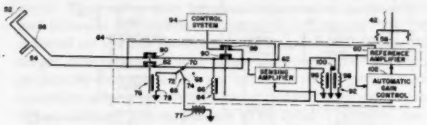


An intrusion detection system comprises a fence mounted coaxial electret cable connected to remote signal processing apparatus which includes both automatic alarm circuits and a loudspeaker, the latter producing sounds generated by audio frequency signals propagating on the cable. The automatic alarm circuit responds to cable signals that meet predetermined criteria for bandpass, amplitude and duration to indicate a suspected intrusion; the loudspeaker reproduces sounds caused by the condition which produces the alarm and permits the operator to aurally determine the nature of the condition for verifying in real time its valid or spurious character. The signals on the cable may be manually or automatically switched to the loudspeaker or may be continuously connected to it as required or desired.

3,833,898
PROXIMITY DIFFERENTIAL CONTROL

Alvin H. Wilkinson, Talala, Okla., assignor to Auto Crane Company, Tulsa, Okla.

Continuation-in-part of Ser. No. 240,359, April 3, 1972, abandoned. This application Nov. 2, 1973, Ser. No. 412,163
Int. Cl. G08b 21/00
U.S. Cl. 340—267 C 8 Claims

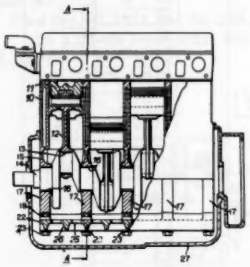


A proximity differential control for use with construction equipment and sepcifically cranes operating in the near proximity to an energized electrical power line comprises a reference antenna positioned at substantially the closest desired distance of operation from an electrical power line, at least one substantially identical sensing antenna positioned on the movable equipment, substantially identical receiving and amplifying means for each of the said antennas, and control means for comparing the relative strength of electrical fields around each of the antennas, and for shutting down the movable equipment when one of the sensing antennas moves into an area having a greater electrical field strength than that of the reference antenna.

3,833,899
DEVICE FOR ACTUATING AN ALARM IN THE CASE OF BREAKING IN

Jean Charles Joseph Blosse, Sannois, France, assignor to Bloscop, Sannois, France

Filed May 19, 1972, Ser. No. 255,030
Claims priority, application France, May 19, 1971, 71.18129
Int. Cl. G08b 13/08
U.S. Cl. 340—274 2 Claims

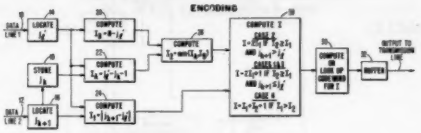


Device for actuating an alarm in the event of a breaking into a premises by opening a door or the like. The device comprises a lock for locking the door, a detecting mechanism for detecting the opening of the door and connected through an arming mechanism to an alarm signal generator. The arming mechanism comprises a switch which is actuated directly by the bolt of the lock for either allowing or precluding actuation of the alarm. The switch is of the type having a pushbutton and is successively closed and opened and vice versa by successive depressions of the pushbutton effected by the bolt.

3,833,900
IMAGE COMPACTION SYSTEM

Lalit R. Bahl, Yorktown Hgts., N.Y.; Daniel I. Barnea, Tel Aviv, Israel, and Hisashi Kobayashi, Mohegan Lake, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 18, 1972, Ser. No. 281,895
Int. Cl. H04l 3/00
U.S. Cl. 340—347 DD 6 Claims

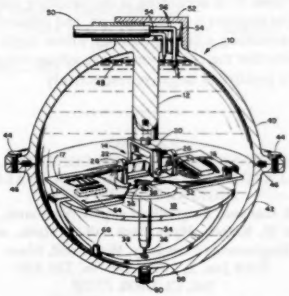


A data compaction system wherein segmented binary data that has redundancy between segments is compacted by means of differential run-length encoding. For compaction of document digitized data, the segments represent lines on the document. Black image points on the document which are represented by a "1" are coded relative to the position of a 1 appearing in the line above the one being coded. The differential distance between binary 1 bit positions on successive lines are coded in accordance with a compaction code. Codewords having a small number of bits are used for small differentials.

3,833,901
MAGNETIC COMPASS HAVING REMOTE DIGITAL READOUT

John T. Fowler, Winthrop, Mass., assignor to Arthur D. Little Inc., Cambridge, Mass.

Filed Aug. 28, 1972, Ser. No. 284,362
Int. Cl. G08c 9/04; H03k 13/02
U.S. Cl. 340—347 P 12 Claims



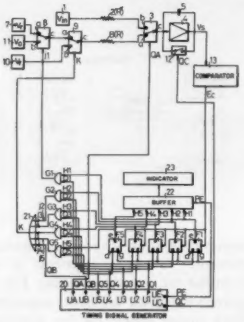
A magnetic compass having a code disk disposed for rotation in accordance with compass position and which is electro-optically sensed to provide electrical output indications of compass position. A Gray-coded disk is employed having a selected code sequence to provide unambiguous transitions throughout the compass circle, and associated logic circuitry is provided to process the detected Gray code information for production of serial digital output pulses for transmission to remote receiving locations and display of compass heading.

3,833,902

INTEGRATING A-D CONVERSION SYSTEM

Tetutaro Eto, No. 841, 2-chome, Soshigaya, Tokyo, Japan

Continuation of Ser. No. 84,365, Oct. 27, 1970, abandoned. This application Oct. 5, 1972, Ser. No. 295,186
Claims priority, application Japan, Oct. 30, 1969, 44-86639
Int. Cl. H03k *13/02*
U.S. Cl. 340—347 NT **3 Claims**



An integrating A-D conversion system which is adapted to provide an analog input voltage in the form of a binary number and comprises the steps of (1) positively integrating a positive analog input voltage for a period of time 2T, (2) subtracting from the resulting voltage in (1) a negative voltage produced by integrating a negative reference voltage $-V_r$ for a period of time T, (3) adding the resulting voltage in (2) with a negative (or positive) voltage produced by integrating the voltage $-V_r$ (or $+V_r$) for a period of time T/2 according as the resulting voltage in (2) is positive (or negative), (4) adding the resulting voltage in (3) with a negative (or positive) voltage produced by integrating the voltage $-V_r$ (or $+V_r$) for a period of time T/4 according as the resulting voltage in (3) is positive (or negative), (5) adding the resulting voltage in (4) with a negative (or positive) voltage produced by integrating the voltage $-V_r$ (or $+V_r$) for a period of time T/8 according as the resulting voltage in (4) is positive (or negative), (6) adding the resulting voltage in (5) with a negative (or positive) voltage produced by integrating the voltage $-V_r$ (or $+V_r$) for a period of time T/16 according as the resulting voltage in (5) is positive (or negative), ... and so on, and obtaining a digital output, representing a binary number whose digits are determined by whether the corresponding resulting voltages in (2), (3), ... are positive or negative respectively.

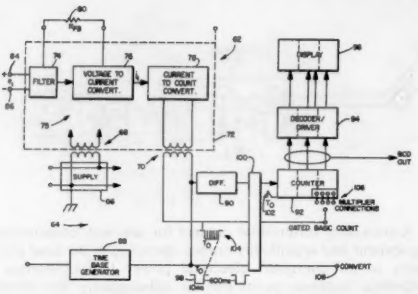
3,833,903

COMPENSATED VOLTAGE-CONTROLLED OSCILLATOR PARTICULARLY FOR ANALOG TO DIGITAL CONVERTERS

Bernard M. Gordon, Magnolia; Leopold Neumann, Lexington, and Ivan H. Kirsch, Hyde Park, all of Mass., assignors to Gordon Engineering Company, Wakefield, Mass.

Filed Jan. 2, 1973, Ser. No. 320,639
Int. Cl. H03k *13/20*
U.S. Cl. 340—347 AD **21 Claims**

A voltage-controlled oscillator of general applicability comprises a charge switching circuit for generating a signal of precise frequency. Selected components provide temperature compensation for stable operation. An analog to digital converter comprises a floating analog section and a grounded digital section, the analog section including a voltage-controlled oscillator of the aforementioned type and the digital section including a time base generator and a programmable counter. In the voltage-controlled oscillator, an analog input signal is translated to a proportional current and a pulsed signal having a functionally related frequency is generated. The pulsed signal is coupled to the grounded digital section through a coupling transformer, which also couples a timing signal generated by the time base generator for synchronizing the floating analog section and the grounded digital section. The coupled pulse signal is added to the timing signal and applied to the counter which is gated to respond to only those



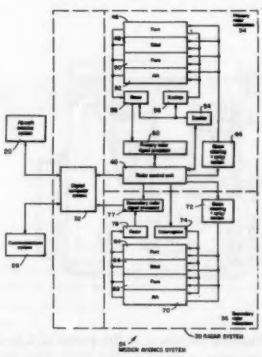
pulses occuring within a selected time interval. Tracking components in the voltage-controlled oscillator and time base generator operate to compensate for a frequency change of the pulsed signal due to the effects of temperature by a counteracting change of the selected time interval to which the counter is responsive. Selective programming of the counter provides digital form signals in arbitrary engineering units.

3,833,904

AIRBORNE SWITCHED ARRAY RADAR SYSTEM

Richard A. Gebhardt, Orange; Willis M. Priester, Garden Grove; Donald A. Muchlinski, La Habra; Donald L. King, La Mirada; Donald P. Parke, Anaheim; Gerald M. Goldberg, Placentia; Stuart P. Scheidler, Anaheim, and Richard Sidlo, Placentia, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Feb. 5, 1973, Ser. No. 329,764
Int. Cl. G01s *9/02*
U.S. Cl. 343—5 DP **15 Claims**



An airborne radar system is disclosed utilizing multiple fixed antenna arrays mounted within the periphery of the aircraft to avoid aerodynamic modifications and optimumly placed to achieve 360° surveillance coverage. The arrays preferably include a fore mounted array, an aft mounted array, a port mounted array and a starboard mounted array for respectively firing beams in different azimuth sectors relative

to the aircraft. Each array is comprised of dipole elements having phase shifters coupled thereto for steering a beam within the corresponding sector. The radar system may include both primary and secondary radar subsystems with the dipole elements of primary and secondary radar antennas being physically interleaved in the aforementioned antenna arrays. The primary radar antennas time share an exciter, transmitter, receiver and signal processor through switching devices. The secondary radar antennas (typically an IFF/SIF system) similarly time share transmitting and receiving equipment. Time allocation between antennas of each subsystem and between operational modes such as "search" or "track" is based on various factors such as mission objectives, current target characteristics and radar purpose. Time allocation is preferably determined by an "on line" stored program digital computer which generates a radar control command to define the parameters for each beam to be fired. Typically, the control command specifies (1) array (2) beam elevation (3) beam azimuth (4) total number of fill and data pulses (5) number of fill pulses (6) frequency and (7) pulse repetition rate or frequency. For each radar subsystem, this control command is interpreted by a radar control unit which responds by controlling various system elements including the exciter, transmitter, switches, phase shifters and duplexers to cause the defined beam to be fired. Each control command also preferably specifies parameters utilized to interpret the return beam including (8) ground doppler offset (9) threshold (10) range start time and (11) range end time. This latter information is employed by the radar control unit to enable primarily the receiver and signal processor to generate a beam return report which is then communicated by the radar control unit to the digital computer. The beam return report typically includes a header portion specifying the (1) clutter level and (2) jam level for each different frequency. The report also includes a subreport for each return beam which specifies (3) range (4) amplitude (5) doppler filter number and (6) ratio of signal to clutter plus noise. The digital computer then utilizes the beam return report to determine subsequent control commands.

3,833,905

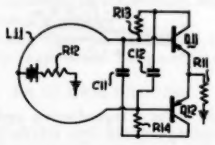
PROXIMITY FUZE

Maurice Apstein, Bethesda, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 17, 1971, Ser. No. 210,262

Int. Cl. F42c *13/04*; G01s *9/02*

U.S. Cl. 343—7 PF **8 Claims**



A proximity fuze employs a push-pull oscillator to generate an r–f signal, to be transmitted and to detect the doppler shift in the received r–f signal. In one embodiment the push-pull oscillator includes plural pairs of matched transistors and inductive feedback from a loop antenna. The transistors are connected to operate in series in respect to the r–f carrier and in parallel in respect to the doppler component of the received signal. As a result, the r–f carrier is cancelled out, oscillator loading is eliminated and the doppler signal appears at twice the voltage over that obtained with a single detector.

3,833,906

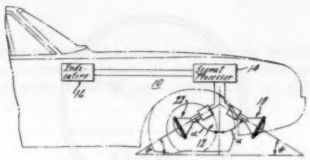
DOPPLER RADAR FOR LAND VEHICLES

Carroll F. Augustine, Farmington, Mich., assignor to Midwest Microwave, Inc., Ann Arbor, Mich.

Filed Feb. 14, 1972, Ser. No. 226,107

Int. Cl. G01s *9/44*

U.S. Cl. 343—9 **12 Claims**



A doppler radar system for automobiles and the like which is especially adapted for measuring speed of the vehicle. Preferably, two radar antennas are utilized, one of which is forwardly and downardly directed and the other of which is rearwardly and downwardly directed. The doppler signals from each of the antennas are summed to provide a velocity signal which is compensated for changes in the pitch of the vehicle. Each of the antennas includes a horn and a dielectric lens for the horn for focusing the transmitted energy at the traveling surface.

3,833,907

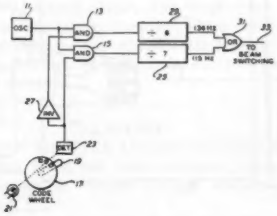
LANDING AND APPROACH SYSTEM SCAN-RATE STATION IDENTIFICATION

Leonard O. Vladimir, Chappaqua, N.Y., assignor to The Singer Company, Little Falls, N.J.

Filed Jan. 2, 1973, Ser. No. 320,016

Int. Cl. G01s *1/16*

U.S. Cl. 343—108 M **9 Claims**



A method of and apparatus for providing Morse Code identification of a microwave landing system transmitting station in which the glide slope and localizer beams are switched at a first frequency to transmit a dot or dash and at a second frequency to transmit a space and the first frequency then

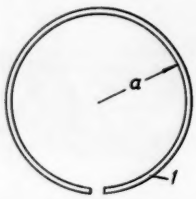
decoded, using a band pass filter in the airborne receiver, and used to key an audio oscillator to provide the pilot with an audio output.

3,833,908

BACK-FIRE LOOP ANTENNA

Shiu-Chang Loh, 12 Cooper Road, Jardine's Look-out, Hong Kong

Continuation-in-part of Ser. No. 138,700, April 29, 1971, abandoned. This application July 25, 1973, Ser. No. 382,388
Int. Cl. H01q 19/10
U.S. Cl. 343—741 7 Claims



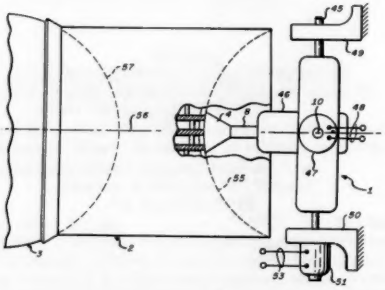
A back-fire loop antenna having a loop of one or more turns situated between a pair of reflectors parallel with the plane of the loop, one reflector being larger than the other, there being means for supporting the loop and the reflectors in the required positions.

3,833,909

COMPACT WIDE-ANGLE SCANNING ANTENNA SYSTEM

Arthur H. Schaufelberger, Crystal Beach, Fla., assignor to Sperry Rand Corporation, New York, N.Y.

Filed May 7, 1973, Ser. No. 358,242
Int. Cl. H01q 19/06
U.S. Cl. 343—754 9 Claims



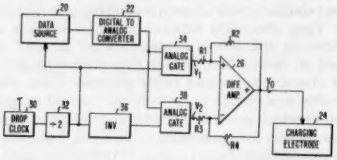
A compact, rapidly scannable, high frequency directional antenna system provides wide-angle space scanning in one or more dirctions by employing a moving feed for commutating energy flow through a wave guide array illuminating or receiving high frequency energy from a cylindrical or spherical energy collimator.

3,833,910

INK DROP PRINTER CHARGE COMPENSATION

Winston H. Chen, Vestal, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 18, 1973, Ser. No. 370,884
Int. Cl. G01d 18/00
U.S. Cl. 346—1 9 Claims



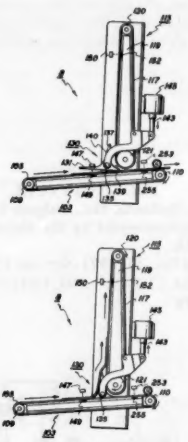
Every other drop in an ink jet printer is charged for use in printing, and intervening drops are charged negatively with a charge proportional to the charge on the preceding drop.

3,833,911

REPRODUCTION SYSTEM AND METHOD WITH SIMPLEX AND DUPLEX MODES OF OPERATION

John R. Caldwell, Rochester, and Denis J. Stemmle, Williamson, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 29, 1972, Ser. No. 319,833
Int. Cl. B65h 29/58; G03g 15/00
U.S. Cl. 346—74 ES 9 Claims



This invention is for a reproduction system and method capable of producing collated copy sets for both simplex and duplex modes of operation. For simplex operation copies from the processor are inverted by an inverting apparatus which includes a horizontal vacuum transport which positively positions a sheet onto a vertical vacuum transport upon activation of deflector fingers. The vertical transport reverses in response to signals to deliver the sheets onto the horizontal transport with trailing edge becoming leading edge. The horizontal transport delivers copies to an array of tray members which are moved past a sheet discharge zone in timed relation to receive the copy sheets and collate them. For duplex operating inverting is omitted with the sheets moving from horizontal transport directly to the trays.

3,833,912

EXPOSURE CONTROL SYSTEM FOR A SINGLE LENS REFLEX CAMERA

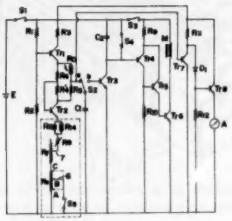
Toshio Kobori, and Masaru Ohba, both of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka-fu, Japan

Filed Oct. 9, 1973, Ser. No. 404,464

Claims priority, application Japan, Oct. 17, 1972, 47-119305[U]

Int. Cl. G03b 7/08

U.S. Cl. 354—24 10 Claims



An exposure control system in a single lens reflex camera has a variable resistor adjusted depending upon the film sensitivity value and a variable resistor adjusted with the set value of the diaphragm aperture, the resistors being connected in series with a light measuring circuit including a photoelectric element which receives the light traversing the photographing lens and producing a light measuring output voltage corresponding to a logarithmic value of the light incident on the photoelectric element, so as to produce a control voltage for exposure control depending upon the film sensitivity value, the diaphragm aperture value which is adjusted at the time of exposure and the brightness of a photographic object. A switch is connected between one terminal of the diaphragm aperture variable resistor and the sliding contact terminal moveable in association with a movement of the diaphragm adjusting ring of the camera, the switch being closed for producing a control voltage from the stop down exposure measuring outputs and opened for producing a control voltage from the full aperture exposure measuring output, thus controlling the shutter exposure time under stopped down and fully open diaphragm aperture viewing.

3,833,913

CLOSED-LOOP DIAPHRAGM ADJUSTMENT MECHANISM FOR A CAMERA

Richard Wick; Alfred Winkler, both of Muenchen, and Eduard Wagensonner, Aschheim, all of Germany, assignors to Agfa-Gevaert Ag, Munich, Germany

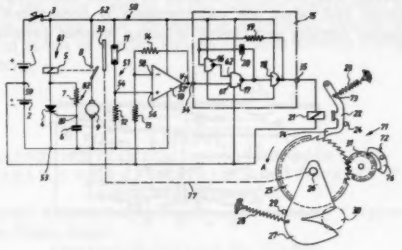
Filed Aug. 29, 1973, Ser. No. 392,463

Claims priority, application Germany, Aug. 31, 1972, 2242925

Int. Cl. G03b 7/08, 9/06

U.S. Cl. 354—42 10 Claims

An arrangement is described for automatically adjusting the shutter opening in a camera in accordance with the quantity of light incident on a photosensitive detector of the camera. A pulse generator is triggered when the excitation voltage developed by the detector and applied to the pulse generator input exceeds the latter's threshold. An electromagnet energized by the triggered pulse generator incrementally advances a spring-loaded diaphragm via a modified panel and ratchet mechanism in a first direction at the pulse rate, thereby progressively decreasing the shutter opening. A light blocking member in the detector moves in synchronism with the diaphragm to progressively decrease the excitation voltage for the pulse generator as the shutter opening decreases. When such decreasing voltage falls below the pulse generator threshold, the electromagnet is disabled. The diaphragm thereupon retracts at a rate slower than the pulse rate until the



corresponding movement of the light blocking member again permits the excitation voltage to exceed the pulse generator threshold, thereby establishing a stable size for the shutter opening.

3,833,914

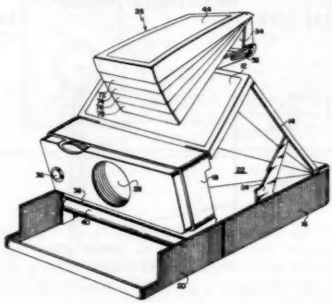
FOLDING CAMERA

Joseph H. Allen, Needham, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Oct. 19, 1972, Ser. No. 298,872

Int. Cl. G03b 19/12

U.S. Cl. 354—188 12 Claims



An improved, compact, folding, single lens reflex camera of the self-developing type. The camera is provided with an improved viewing device light shield or shade which is formed by a plurality of U-shaped blades. The blades have integrally formed interlocking tabs and notches which facilitate movement of the blades between collapsed and deployed positions in response to moving a viewing device cover between folded and extended positions.

3,833,915

ELECTRONIC SHUTTER APPARATUS FOR CAMERA

Harumi Tanaka, Kobe, and Akira Yoshizaki, Osaka, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Oct. 12, 1973, Ser. No. 405,990

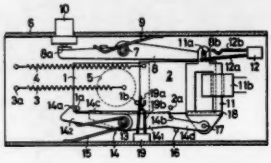
Claims priority, application Japan, Oct. 28, 1972, 47-108240

Int. Cl. G03b 9/16, 9/40, 9/62

U.S. Cl. 354—258 10 Claims

An apparatus including a release member operable by shutter release action to shift an electromagnet and a shutter opening and closing initiating member supporting an attrac-

tion piece at its one end. While the shutter is in its cocked state, the release member holds the electromagnet pressed against the attraction piece. Energization of the electromagnet causes the shutter opening and closing initiating member to operate with the release member to initiate shutter opening action and, when the electromagnet is deenergized, the shutter opening and closing initiating member permits the



shutter to close. The apparatus further includes means for detecting energization or unenergization of the electromagnet and visually indicating in the finder field that the camera is not ready for taking a photograph when the electromagnet is unenergized. At the almost final stage of travel of a shutter blind, the means further brakes the blind to prevent the blind from bouncing when the blind stops.

3,833,916

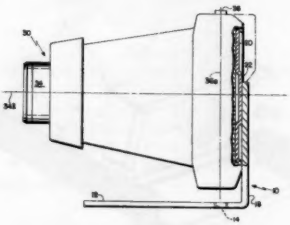
PHOTOGRAPHIC CAMERA SUPPORT

Jan Van Der Meer, Enschede, Netherlands, assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 31, 1973, Ser. No. 328,497The portion of the term of this patent subsequent to Jan. 9, 1990, has been disclaimed.

Int. Cl. G03b *17/56*

U.S. Cl. 354—293 **14 Claims**



A simple, relatively inexpensive attachment for use with a photographic camera which does not have provision for tripod attachment, preferably a camera which has a configuration such that the optical axis of the camera lens is in a non-parallel orientation with respect to the supporting base of the camera. The attachment permits a realignment of the optical axis of the camera lens to a horizontal position whereby it may be conveniently positioned on a flat surface and/or coupled with a conventional tripod. The attachment comprises a flat rectangular plate portion which can be inserted into channels on the back of the camera. Disclosed is an embodiment where a portion of the attachment is hinged for portability.

3,833,917

DENTAL FILM STRIPPER

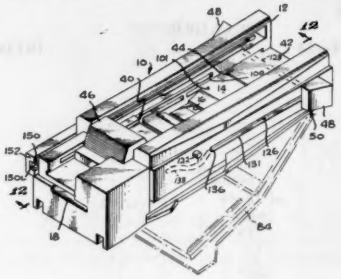
Gunter Schmidt, Marina Del Rey, Calif., assignor to Productron, Inc., Los Angeles, Calif.

Division of Ser. No. 850,477, Aug. 15, 1969. This application Mar. 14, 1973, Ser. No. 341,094

Int. Cl. G03d *3/00*

U.S. Cl. 354—310 **4 Claims**

A stripping device for use with a dental film package that includes a film chip contained within an outer protective covering, to strip the package in daylight and enable insertion of the chip into a film processing machine. The device includes a light-tight housing with a member that engages a tab on the outer covering of the film package, so that the package can be manually pulled along the outside of the housing to peel off



the covering from one end of the package while moving that end over a slot in the housing. A slide within the housing then can be moved to draw the contents of the film package out of the covering and through the slot into the housing, so the film chip can fall through an exit and into the developing machine.

3,833,918

PHOTOGRAPHIC PROCESSING APPARATUS

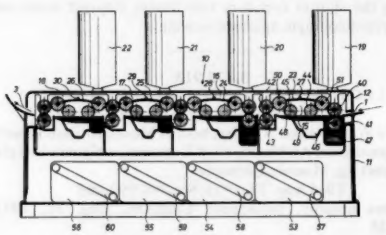
Emile Frans Stievenart, Hoboken, and Herman Fernand Verbruggen, Berchem, both of Belgium, assignors to AGFA-Gevaert, Mortsel, Belgium

Filed Feb. 20, 1973, Ser. No. 333,649

Claims priority, application Great Britain, Feb. 21, 1972, 7997/72

Int. Cl. G03d *3/12*

U.S. Cl. 354—321 **13 Claims**



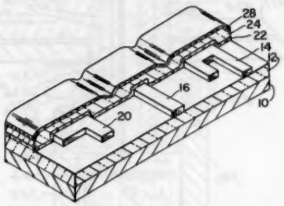
A processing apparatus which comprises a pair of inlet rollers, a pair of outlet rollers, a guide plate forming the bottom of the processing tray and at least one non-driven roller, situated above the bottom and partly or wholly immersed in the processing solution. The peripheral speed of the pair of outlet rollers slightly exceeds that of the pair of inlet rollers, so that a sheet of photographic material is lifted from the bottom when its leading edge reaches the nip of the pair of outlet rollers. Optionally a suplementary roller may be provided, which is frictionally driven by the upper one of the pair of inlet or outlet rollers and which imparts its rotation to the immersed rollers.

3,833,919

MULTILEVEL CONDUCTOR STRUCTURE AND METHOD

Charles T. Naber, Centerville, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Filed Oct. 12, 1972, Ser. No. 296,920
Int. Cl. H01l 23/48, 29/46, 29/54, 29/62
U.S. Cl. 357—71 7 Claims



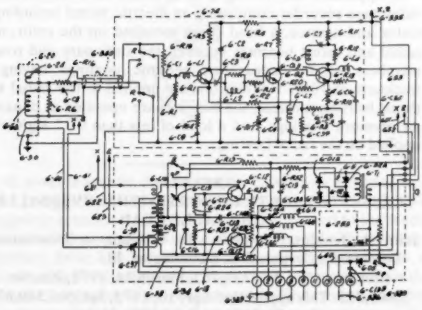
The present invention relates to a multilevel conductor structure and to a method of insulating an upper level of conductors from a lower level of conductors on a silicon substrate of an integrated circuit. An undoped silicon oxide insulator layer and a doped silicon oxide insulator layer are successively placed on the lower level of conductors and the structure is heated to a temperature which is sufficient to cause the doped oxide insulator layer to soften and to flow above the lower conductors to produce tapered steps over the edges of the lower level of conductors. An upper level of conductor is then formed on the tapered doped silicon oxide insulator layer. The undoped silicon oxide insulator layer formed between the doped silicon oxide insulator layer and the lower level of conductors prevents doping atoms of the doped silicon oxide insulator layer from penetrating into source or drain regions of the silicon substrate which are usually in the vicinity of the lower level of conductors to change their conductivity.

3,833,920

VIDEO TRANSDUCING ELECTRIC CIRCUITS

Marvin Camras, Glencoe, Ill., assignor to IIT Research Institute, Chicago, Ill.

Continuation of Ser. No. 182,202, Sept. 20, 1971, which is a division of Ser. No. 34,504, May 4, 1970, Pat. No. 3,705,954, which is a division of Ser. No. 649,256, June 27, 1967, Pat. No. 3,596,008, which is a continuation-in-part of Ser. No. 528,934, Feb. 21, 1966, abandoned. This application Apr. 19, 1973, Ser. No. 352,593
Int. Cl. G11b 5/44; H04n 5/78
U.S. Cl. 360—33 1 Claim



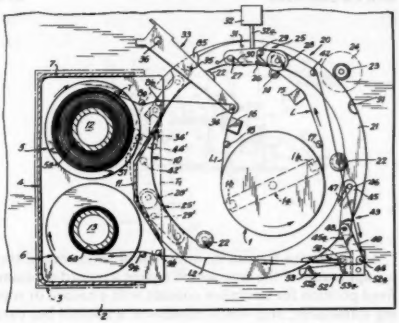
Monochrome and color television recording and playback circuitry for coupling of a video magnetic transducer head with a standard broadcast television receiver, the circuitry including a coupling capacitor and means for supplying electric charge to one terminal of the capaictor, a record-playback switch connected between the other terminal of the capacitor and one terminal of the head winding, and a resistor for maintaining the other terminal of the capacitor substantially at ground potential while the switch is in playback position to prevent surges of current through the head winding during switching.

3,833,921

MAGNETIC RECORDING AND/OR REPRODUCING APPARATUS WITH CASSETTE LOCKING TO PREVENT ACCIDENTAL REMOVAL

Nobutoshi Kihara, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sept. 20, 1973, Ser. No. 399,049
Claims priority, application Japan, Sept. 21, 1972, 47-109960
Int. Cl. G11b 15/66, 23/04
U.S. Cl. 360—85 20 Claims



In a magnetic recording and/or reproducing apparatus having a tape guide drum, at least one rotary magnetic head moved in a circular path coinciding with the circumferntial surface of the drum for scanning a magnetic tape wrapped about at least a portion of that surface, a tape supply, such as, a cassette containing reels on which a magnetic tape is wound, a capstan spaced from the guide drum, and a holder for receiving and positioning the cassette at a location spaced from the guide drum; a tape loading and unloading device is provided which comprises a support ring rotatable around the drum between inactive and operative positions in an arcuate path that extends adjacent the capstan and the holder, a tape engaging assembly including a pinch roller mounted on the support ring and being movable with the latter in the aforementioned arcuate path for engaging the tape contained in the cassette positioned by the holder with the support ring in its inactive position and for withdrawing a progressively extended loop of tape from the cassette and wrapping one side of the extended tape loop about at least a portion of the guide drum circumference in response to movement of the support ring from the inactive to the operative position at which the pinch roller is located within the tape loop adjacent the capstan with the tape of the loop therebetween, and a tape shifting assembly controllable by a cam surface on the support ring for engaging the tape in the cassette with the support ring in its inactive position and for shifting the tape between the guide drum and cassette in the direction increasing the extent of the guide drum circumference about which the tape is wrapped in

response to the movement of the support ring to its operative position. The cam surface on the support ring further controls a cassette locking assembly which prevents removal of a cassette from the holder when the support ring is displaced from its inactive position.

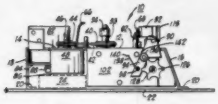
ERRATUM

For Class 360—92 see:
Patent No. 3,833,224

3,833,922
DRIVE MEANS FOR EFFECTING PIVOTAL VERTICAL MOVEMENT OF A TRANSDUCER HEAD INTO OPERATIVE POSITION

Lawrence R. DeBell, Bethany, and David D. Price, Jr., Oklahoma City, both of Okla., assignors to The Economy Company; David D. Price, Jr. and Ford C. Price, all of Oklahoma City, Okla., part interest to each

Filed Mar. 12, 1973, Ser. No. 340,178
Int. Cl. G11b *21/02, 21/22*
U.S. Cl. 360—105 **13 Claims**



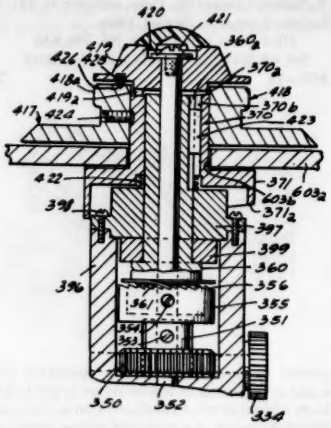
An apparatus for use in combination with record transducing apparatus of the type which moves a record medium past a fixed position for operative contact with a record or reproducing transducer, and which consists of a control bar carrying a transducer head and capstan idler thereon which is pivotable about a horizontal axis to move the transducer and idler into engagement or out of engagement with the record medium; the pivotal control bar movement is effected by means of a rotationally driven mechanical linkage, including a star wheel in engagement with the control bar, a gear train assembly and an electric motor which supplies the rotational drive.

3,833,923
CHANNEL INDEXING SYSTEM WITH MANUAL OR AUTOMATIC OPERATION AND WITH MANUAL FINE ADJUSTMENT

Marvin Camras, Glencoe, and Stanley A. Galus, Chicago, both of Ill., assignors to IIT Research Institute, Chicago, Ill.

Filed Aug. 21, 1972, Ser. No. 282,274
Int. Cl. G11b *21/08, 21/10*
U.S. Cl. 360—106 **1 Claim**

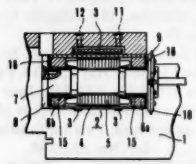
In the illustrated embodiments a rotary head indexing cam has a power drive train releasably coupled therewith for automatic head indexing with a manual channel selector driven by the power drive train during automatic indexing while being manually operable to select a given channel independently of the drive train. A fine channel adjustment control is operable to shift the indexing cam axially for fine adjustment of head position relative to a selected channel. A latch retaining the capstan drive in operating position is mechanically released as the head completes scanning of a succession of chennels on the record tape. Capstan pressure rollers on hinged arms are swung through an open end of an endless loop cartridge to engage the record tape with the capstan, a predetermined bias being applied to the pressure rollers to press the same toward the capstan in the operating position.



3,833,924
ROTARY HEAD APPARATUS WITH DYNAMIC AIR BEARINGS HAVING CERAMIC COATINGS

Koichi Okabe, Tokyo, Japan, assignor to Shiba Electric Co., Ltd., Tokyo, Japan

Filed Oct. 27, 1972, Ser. No. 301,264
Claims priority, application Japan, Oct. 30, 1971, 46-101025
Int. Cl. G11b *5/52, 21/04;* **F16c** *33/20*
U.S. Cl. 360—107 **3 Claims**



In apparatus for driving a head drum of a broadcasting video tape recorder comprising an electric motor including a stator and a rotor, a head drum mounted on the rotor, and radial and thrust bearings between the stationary and rotary members of the apparatus, ceramic coatings having a thickness of 10 to 100 microns are applied to the radial and thrust bearing surfaces, the bearings are operated as dynamic air pressure bearings, and a load of less than 0.15 Kg/cm² is applied on the radial bearing.

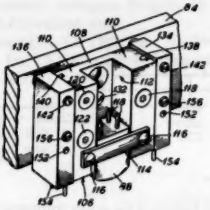
3,833,925
CASSETTE TAPE TRANSPORT WITH UNIVERSALLY ADJUSTABLE HEAD

John P. Jenkins, Towanda, Ill., assignor to International Tapetronics Corporation, Bloomington, Ill.

Division of Ser. No. 237,762, March 24, 1972, Pat. No. 3,800,323. This application Apr. 10, 1973, Ser. No. 349,677
Int. Cl. G11b *21/24, 15/60, 15/18*
U.S. Cl. 360— 109 **15 Claims**

A swing arm supports a sound transducer head and a pinch roller for pivotable movement between three positions as fol-

lows; a recording an reproducing position in which both the head and pinch roller engage the tape, and tape speed is regulated by a capstan; a scanning position in which only the head engages the tape to enable monitoring it at speeds independent of the capstan; and an inactive position in which the head and pinch roller are both out of engagement with the tape. The swing arm is spring-biased toward the inactive position



and is movable to either of the other positions by solenoids. A simplified adjustment, using only three adjusting screws, provides optimum zener, azimuth, and transversely centered relationships between the head and tape. A cassette is mounted in an upright, fully visible and accessible operating position. Deflectible retaining members automatically engage the cassette and hold it in operating position.

3,833,926

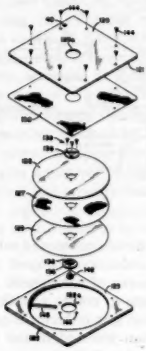
MAGNETIC DISC RECORDER AND CASSETTE WITH COMPLIANT RECORDING DISC HAVING FLEXIBLE SUPPORT MEANS

Robert P. Hall, Auburn, Calif., assignor to Arvin Industries, Inc, Columbus, Ind.

Continuation-in-part of Ser. No. 266,582, June 27, 1972, abandoned. This application Nov. 10, 1972, Ser. No. 305,335

Int. Cl. G11b *5/82*

U.S. Cl. 360—135 **11 Claims**



A novel magnetic disc recording cassette is provided as a thin polygonal cassette housing containing a disc of flexible magnetic recording media. A drive hub attached to the media is exposed through the cassette and cooperates with a complementary drive hub in a deck which receives the cassette in slot-loading fashion into a carriage which in turn positions the cassette for driving of the recording disc. The cassette and disc may be single or double sided, and includes access opening for a magnetic transducer to follow different circular tracks, or a helical track. The thin magnetic disc is provided with backing in the cassette to assure compliant interface of the transducer with the magnetic recording disc. The backing may be a backing sheet, discs of backing material, or felt surfaced shims adjacent the region of interface with the transducer. Passages are provided for air flow in response to rotation of the recording disc to provide a continuing smooth and minimum friction rotation of the disc within the cassette. The cassette is supported either on the base of the carriage or by a separately adjustable three point suspension system.

3,833,927

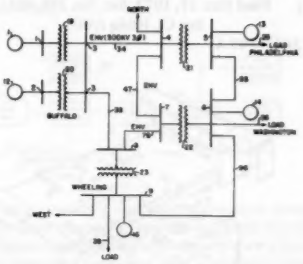
SYSTEM AND METHOD FOR MONITORING TRANSIENT STABILITY IN A HYBRID LOADFLOW COMPUTER ARRANGEMENT WITH TRANSIENT STABILITY ANALYSIS CAPABILITY

Norman R. Carlson, Export; Paul H. Haley, Pittsburgh, both of Pa., and Mark K. Enns, Ann Arbor, Mich., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 19, 1972, Ser. No. 254,859

Int. Cl. G06j *1/00*; **G06f** *15/06, 15/56*

U.S. Cl. 444—1 **4 Claims**



A hybrid loadflow computer arrangement includes an analog network simulator and a digital computer which interchange signals through analog input and output circuitry during transient analysis. The analog simulator includes modular bus, generator, load, tie line and line DC circuits representative of electric power system buses, generators, loads, tie lines and lines. The analog simulator provides generator swing angles and generator rotational velocities to the digital computer. The computer monitors the generator swing angles and rotational velocities to determine and indicate whether they are within predetermined tolerances.

3,833,928

VEHICLE-TRAILER ANGULAR POSITION SENSOR AND INDICATOR

Stephen E. Gavit, 4832 W. Gill Pl., Denver, Colo. 80219, and William E. Stenson, 5332 Arbutus, Arvada, both of Colo. 80002

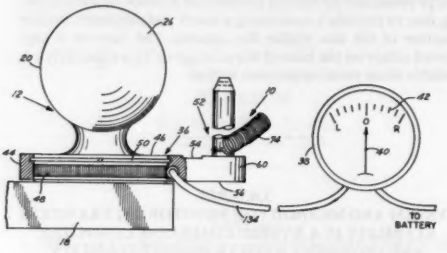
Filed Jan. 8, 1973, Ser. No. 321,858

Int. Cl. B60q *1/00*

U.S. Cl. 340—52 R **12 Claims**

A device for sensing and indicating the relative angular relationship between a tow vehicle and a trailer universally connected to the tow vehicle by a ball hitch assembly includes a sensor adapted to be mounted directly beneath the ball portion of the hitch assembly to function electro-mechanically in

varying a potential output from the sensor dependent upon the relative angular relationship between the trailer and the tow



vehicle whereby such angular relationship is displayed on an electrically responsive visual indicator mounted preferably on the control panel of the tow vehicle.

3,833,929

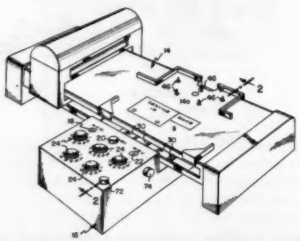
POSITIVE IDENTIFICATION CREDIT OR ID CARD AND APPARATUS

Joseph F. Kirley, 27 Fairfield Ave., Norwalk, Conn. 06854

Filed Oct. 17, 1972, Ser. No. 298,403

Int. Cl. H04q *1/00*

U.S. Cl. 340—149 A **13 Claims**



A credit card positive identification arrangement having a machine incorporated with a standard type credit card charge slip information imprinting device and providing a visual read out of the acceptability or non-acceptability of the credit or ID card to be validated. The device utilizes a combination of a plurality of rotatable secret bridging wiper contacts to change the electrical circuit in the card from an open circuit to a closed circuit and thereby signal an acceptable card. An electronic positive identification arrangement is also contemplated in which an electronic control circuit, being activated by the proper secret digital combination, will operate a servo motor to rotate the respective indicators to their proper settings. Another type of positive identification arrangement is shown utilizing magnet attraction between a disc magnet and a printed circuit in the card to set the proper combination and thereby close the electrical circuit in the card.

3,833,930

INPUT/OUTPUT SYSTEM FOR A MICROPROGRAM DIGITAL COMPUTER

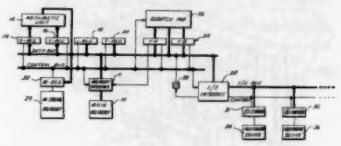
John Arthur Macker, Goleta, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Jan. 12, 1973, Ser. No. 323,107

Int. Cl. G06k *17/00*; G06f *13/08*

U.S. Cl. 340—172.5 **4 Claims**

An input/output sub-system for a digital data processing system having a microprogrammed processor and main memory in which the processor functions as a multiplexor for transferring data between a plurality of peripheral devices and the memory. The I/O controls for the peripheral devices share a common bus to the processor. The controls are slaved to the processor and operate to send or receive information over the common bus only in response to commands from the processor. However, any I/O control unit can signal the processor that it needs service. Each command addressed to one of the



I/O control units is followed by status information returned on the bus to the processor by the I/O control. In addition, the status of an I/O control can be tested on special command from the processor. Each I/O control is buffered for storage of a block of data. A reference address pointing to the location of the Input/Output Descriptor in memory being executed by the processor is transferred to the control and stored in the buffer. It is returned to the processor after a Service Request by the control is acknowledged by the processor.

3,833,931

MULTICHANNEL SPIN RESONANCE FREQUENCY MEMORY DEVICE

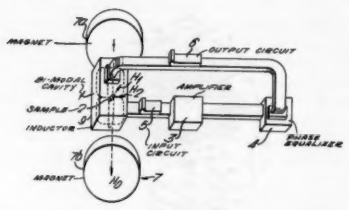
Maurizio Bonori; Cafiero Franconi, and Paolo Galuppi, all of Venezia, Italy, assignors to Consiglio Nazionale Delle Richerche, Rome, Italy

Filed Sept. 21, 1972, Ser. No. 290,871

Claims priority, application Italy, Sept. 22, 1971, 53019/71

Int. Cl. G11c *11/16*; H03f *9/00*; G11c *11/20*

U.S. Cl. 340—173 NI **14 Claims**



Frequency memory device composed substantially of a multiple frequency spin induction damped oscillator, the said oscillator being composed of a magnetic spin resonance inductor, joined by means to create a static magnetic field, in respect of which the said spin inductor is properly oriented, at least one spin specimen inserted in the said inductor, and which for that magnetic field has a complete magnetic response spectrum with a total number N>1 of distinct resonance lines. The inductor is joined by means capable of allowing it to oscillate, such as a loop which includes a positive feedback circuit capable of prolonging the damped oscillations on the excited frequencies beyond the duration of the excitation, by acting as a temporary frequency memory, the circuit being connected between the output and the input of the inductor. The positive feedback circuit comprises an amplifier, capable of supplying the loop, of which it is the closing element, a gain of less than unity. The positive feedback loop includes, in addition, a phase corrector and calibrator of all the N frequencies which propagate in the circuit, in such a way as to allow oscillation of the inductor on all or part of the N

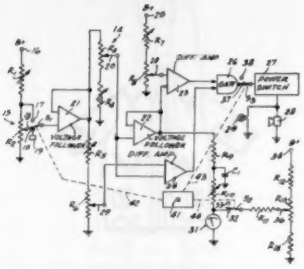
frequencies, whenever an external oscillatory signal, having a defined frequency spectrum is inserted at any point of the loops.

3,833,932

BOOM LENGTH OPERATING RADIUS INDICATOR AND WARNING DEVICE

Martin W. Hamilton, Arlington Heights, Ill., assignor to Eaton Corporation, Cleveland, Ohio

Filed Oct. 12, 1972, Ser. No. 297,062
Int. Cl. G08b 21/00; B66c 15/00
U.S. Cl. 340—267 C **2 Claims**



A system for use with cranes which have booms that may be varied in length and angular relationship which continuously displays the operating radius and provides for a display of the boom length by pressing a button and which provides alarms to the operator for both radius and length of boom.

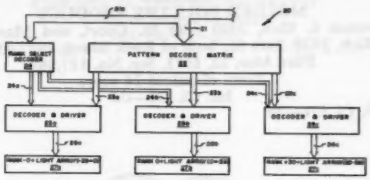
3,833,933

ANALOG METER DISPLAY AND APPARATUS FOR SIGNAL GENERATION THEREFOR

Wayne Wilson, Bountiful, Utah, assignor to Beehive Medical Electronics, Inc., Salt Lake City, Utah

Filed Aug. 28, 1972, Ser. No. 284,124
Int. Cl. G09f 9/34
U.S. Cl. 340—324 R **6 Claims**

An array of lights arranged as a display to reflect an electronic signal generating occurrence. Binary information, in a form such as the phase angle of an electronic signal, is fed into shift registers, a number of decoder matrixes, or to similar digital to position converter apparatus. The incoming signal is converted to energize a number of lights in the array of lights such that the position and arrangement of the energized lights reflects the input signal. A satisfactory arrangement of an array of lights has been found to be two parallel rows of adjacent lights, with lights of one row staggered between the lights of the other row. An incoming electrical signal is reflected by energization of three adjoining lights, two in one row and one in the other, to produce a triangular pointer, with the single energized light pointing to a value indicative of the incoming electrical signal.

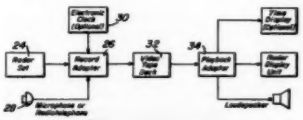


3,833,934

RADAR DATA RECORDING AND REPLAY SYSTEM

Michael A. Roark, Leland, Miss., assignor to BKR, Inc., Greenville, Miss.

Filed May 9, 1972, Ser. No. 251,717
Int. Cl. G01s 7/30, 9/02
U.S. Cl. 343—5 PC **19 Claims**



A radar data recording and playback system comprising a recording adapter circuit for processing output signals from a radar apparatus for recording such on separate channels of a video tape recording apparatus, and a playback adapter circuit for processing the recorded radar data signals into proper form for operation of a radar visual display device. The adapters may also include means for processing heading signals and auxiliary inputs, such as audio signals, for recording such on a separate channel or track of the recording apparatus.

ERRATUM

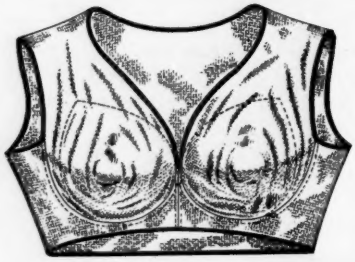
For Class 444—1 see:
Patent No. 3,833,927

DESIGNS

SEPTEMBER 3, 1974

232,601
MOLDED POULTRY PRODUCT
Norman I. Rich, 3501 15th St. Court, and Martin D. Rich, 2920 24th St., both of Rock Island, Ill. 61201
Filed Mar. 22, 1971, Ser. No. 127,084
Term of patent 14 years
Int. Cl. D1—*04*
U.S. Cl. D1—26

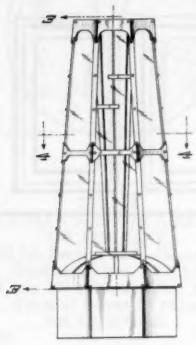
232,602
BRASSIERE VEST
Irwin Greenblatt, Blauvelt, N.Y., and Nicholas A. Marino, Chicago, Ill., assignors to Sears, Roebuck and Co., Chicago, Ill.
Filed Feb. 2, 1973, Ser. No. 329,045
Term of patent 14 years
Int. Cl. D2—*01*
U.S. Cl. D2—24



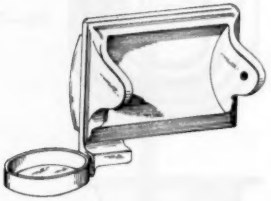
232,603
JACKET
Fidelis M. Morgan, Chula Vista, Calif. (Bancroft Palms Mobile Park 26, 3221 Bancroft Drive, Spring Valley, Calif. 92077)
Filed Apr. 4, 1973, Ser. No. 348,295
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—187

232,604
SKIRT
Gloria C. Kadison, P.O. Box 626, Thousand Oaks, Calif. 91360
Filed Oct. 19, 1972, Ser. No. 298,849
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—223

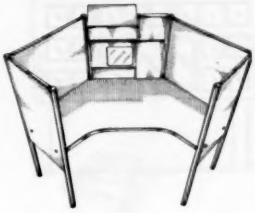
232,605
DISPLAY CABINET
Cecil W. Spicer, 1408 California St. NE., Minneapolis, Minn. 55413
Filed Aug. 9, 1972, Ser. No. 278,964
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—25



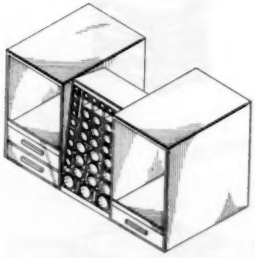
232,606
COMBINED TOILET-TISSUE HOLDER AND CONTAINER SUPPORT
Philip Boone, 15 Fenwick Road, Winchester, Mass. 01890
Filed May 4, 1972, Ser. No. 250,479
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—91



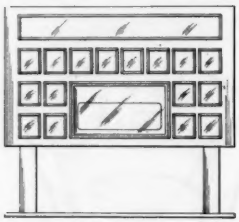
232,607
EDUCATIONAL MODULE
Edward J. Kramer, Rte. 1, Box 846, Clinton, Wash. 98236, and Joseph L. Hendrix, Ferguson, Mo.; said Hendrix assignor to said Kramer
Filed Sept. 11, 1972, Ser. No. 287,727
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—157



232,608
COSMETIC VANITY
Viola Darrow, Cleveland, Ohio (P.O. Box 64, Gibsonton, Fla. 33534)
Filed Dec. 11, 1972, Ser. No. 313,648
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—160

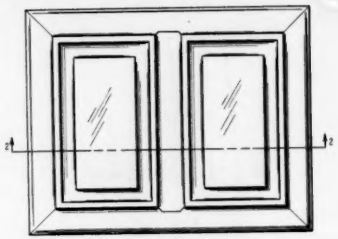


232,609
SHOWCASE FOR TRANSPARENCIES OR SIMILAR ARTICLES
Samuel A. Bishop, 527 Madison Ave., New York, N.Y. 10022
Filed Oct. 10, 1972, Ser. No. 295,994
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—171

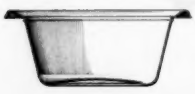


232,610
CABINET FOR DRAWERS OR THE LIKE
Kenneth H. Petersen, 821 Index Court NE., Renton, Wash. 98055
Filed Nov. 24, 1971, Ser. No. 202,059
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—186

232,611
CABINET DOOR
Warren A. Dillen, Louisville, Ky., assignor to H. J. Scheirich Company
Filed Sept. 6, 1972, Ser. No. 286,664
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—192



232,612
NESTABLE BOWL
Hubert E. Christian and David W. Lee, Phoenix, Ariz., assignors to Dart Industries Inc., Los Angeles, Calif.
Filed May 21, 1973, Ser. No. 362,354
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—1



232,613
COMPARTMENTED PLATE
George A. Cheladze, Long Beach, Calif., assignor to Carthage Cup Company, Carthage, Tex.
Filed May 4, 1970, Ser. No. 22,804
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—27

232,614
DETACHABLE HANDLE FOR A BEVERAGE CAN OR THE LIKE
Russell M. Brown, 56 Holliston Road, Medway, Mass. 02052
Filed July 17, 1972, Ser. No. 272,302
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—70

232,615
SPOON OR SIMILAR ARTICLE
Colin B. Richmond II, Oneida, N.Y., assignor to General Mills, Inc.
Filed Oct. 16, 1972, Ser. No. 298,145
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D7—137

232,616
VACUUM CLEANER CASING
Richard A. Wareham, North Canton, Ohio, assignor to The Hoover Company, North Canton, Ohio
Filed July 6, 1973, Ser. No. 377,048
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D7—170

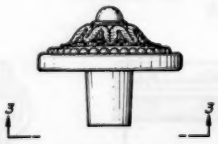
232,617
HEAD FOR MAGNETIC BROOM OR THE LIKE
Albert W. Albrecht, Jr., 380 Mary Lane, Crystal Lake, Ill. 60014
Filed June 9, 1972, Ser. No. 261,569
Term of patent 14 years
Int. Cl. D4—*01*
U.S. Cl. D7—180

232,618
BATTERY TERMINAL CLEANER AND SHAPER
Carl W. Newell, 955 Avonoak Terrace, Glendale, Calif. 91206
Filed Oct. 20, 1972, Ser. No. 299,363
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D7—185

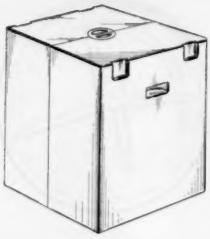
232,619
ADHESIVE GUN
Gerald W. Crum, Elyria, Ohio, assignor to Nordson Corporation, Amherst, Ohio
Filed Mar. 23, 1973, Ser. No. 344,093
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—30

232,620
POWERED WIRE DRILL
Carl L. Foltz, Holiday, Fla., assignor to Concept, Inc., St. Petersburg, Fla.
Filed Apr. 17, 1972, Ser. No. 245,026
Term of patent 14 years
Int. Cl. D8—*01*
U.S. Cl. D8—68

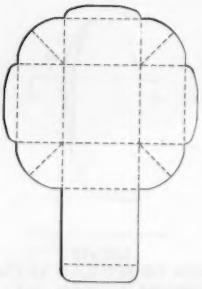
232,621
KNOB
David P. Zagaroli, Hickory, N.C., assignor to Ajax Hardware Corporation, City of Industry, Calif.
Filed Mar. 14, 1973, Ser. No. 341,145
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—144



232,622
INSULATING CONTAINER
G. John Heelan, Olympia, Wash., assignor to Olympia Brewing Company, Olympia, Wash.
Filed June 8, 1972, Ser. No. 261,147
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—187

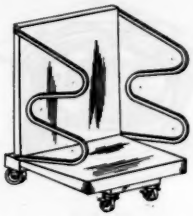


232,623
CARTON BLANK
Edwin C. McLaren, Minneapolis, and William M. Tolaas, St. Paul, Minn., assignors to Hoerner Waldorf Corporation, St. Paul, Minn.
Filed Feb. 10, 1972, Ser. No. 225,376
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—245



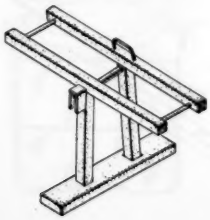
232,624
STORAGE CART
Frank L. Shiflet, Waynesboro, Va., assignor to Hopeman Brothers, Inc., New York, N.Y.
Filed Feb. 20, 1973, Ser. No. 334,041
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D12—25

232,625
STORAGE CART
Frank L. Shiflet, Waynesboro, Va., assignor to Hopeman Brothers, Inc., New York, N.Y.
Filed Mar. 16, 1973, Ser. No. 342,075
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D12—25

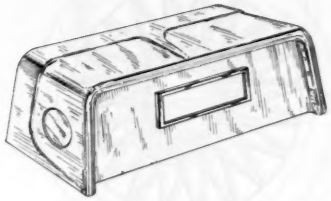


232,626
PITOT TUBE COVER
Harry S. Smallwood, 4125 Timberline Drive, San Jose, Calif. 95121
Filed Dec. 1, 1972, Ser. No. 311,295
Term of patent 7 years
Int. Cl. D12—*99*
U.S. Cl. D12—81

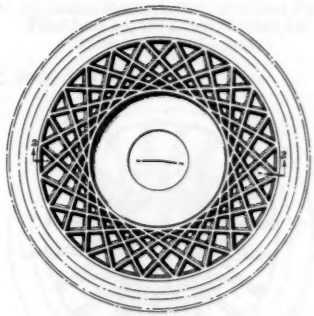
232,627
BICYCLE RACK
Gerald F. Rossi, 9908 Brunswick, San Ramon, Calif. 94583
Filed July 16, 1973, Ser. No. 379,782
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D12—115



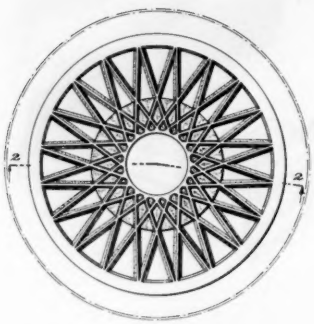
232,628
ONE MAN CAMPER BODY
Jim L. Douglas, Lakewood, Gary J. Hart, Denver, and Norman J. Germaine, Littleton, Colo., assignors to Super Sport Sleepers, Inc., Denver, Colo.
Filed Oct. 18, 1971, Ser. No. 190,432
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—156



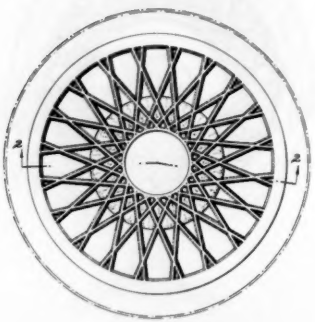
232,629
WHEEL CENTER
John Siroonian, Fresno, and Delmer D. Scott, Los Angeles, Calif., assignors to Western Wheel Company, Fresno, Calif.
Filed May 7, 1973, Ser. No. 357,547
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—208



232,630
WHEEL CENTER
John Siroonian, Fresno, and Delmer D. Scott, Los Angeles, Calif., assignors to Western Wheel Company, Fresno, Calif.
Filed June 4, 1973, Ser. No. 362,189
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—205

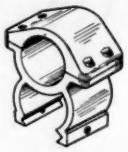


232,631
WHEEL CENTER
John Siroonian, 2640 W. Bullard St., Fresno, Calif. 93705, and Delmer D. Scott, Los Angeles, Calif. (5020 Gloria Ave., Encino, Calif. 91316)
Filed June 11, 1973, Ser. No. 368,638
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—205

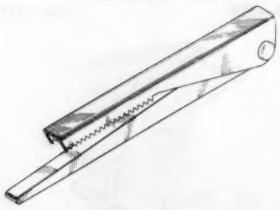


232,632
WHEEL
Raymond C. Brown, Van Nuys, Calif., assignor to Superior Industries, Inc., Van Nuys, Calif.
Filed July 12, 1973, Ser. No. 378,778
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—209

232,633
MOUNT FOR TELESCOPIC SIGHT
Gerald T. Weast, Hazel Park, Mich., assignor to Clear View Manufacturing Company, Hazel Park, Mich.
Filed Nov. 24, 1972, Ser. No. 309,334
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—7



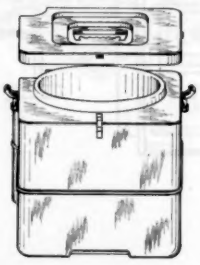
232,634
FISH GRIPPER
George F. May, 121 S. Briscoe St., Dallas, Tex. 75211, and Clifford T. Calfee, 2710 National Drive, Garland, Tex. 75041
Filed Oct. 24, 1972, Ser. No. 299,790
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—31



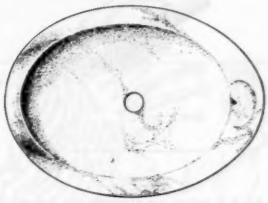
232,635
CHECK VALVE FOR A FRACTIONATING TRAY
Elio Mauri, Milan, Italy, assignor to Koch Engineering Company, Inc., Wichita, Kans.
Filed Sept. 7, 1973, Ser. No. 394,991
Term of patent 14 years
Int. Cl. D23—*01;* D24—*99*
U.S. Cl. D23—22

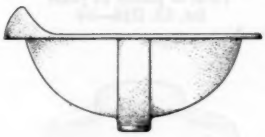
232,636
PORTABLE TOILET
Howard G. Goldsmith, Cranston, R.I., assignor to Todd Enterprises, Inc., Providence, R.I.
Filed Nov. 16, 1972, Ser. No. 307,112
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—48

232,637
PORTABLE TOILET
Howard G. Goldsmith, Cranston, R.I., assignor to Todd Enterprises, Inc., Providence, R.I.
Filed May 21, 1973, Ser. No. 362,186
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—48

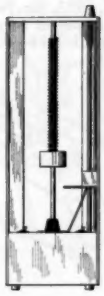


232,638
LAVATORY
John W. Mather, 2635 Washington Mill Road, Bellbrook, Ohio 45305
Filed Mar. 20, 1973, Ser. No. 342,989
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—58



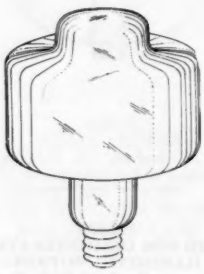


232,639
TEACHING AID FOR DEMONSTRATING DRIVEN HARMONIC MOTION
Roger D. Stephenson, Overland Park, Kans., assignor to Physics Apparatus Research, Inc., Overland Park, Kans.
Filed June 16, 1972, Ser. No. 263,441
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D25—1 R

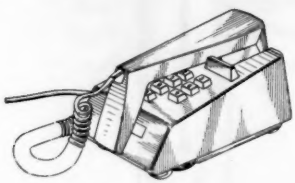


232,640
IGNITION WIRE BOOT FOR SPARK PLUGS
Richard P. Dugger, South Bend, Ind., assignor to Ristance Wire, Inc., Bremen, Ind.
Filed June 1, 1972, Ser. No. 258,940
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—1 A

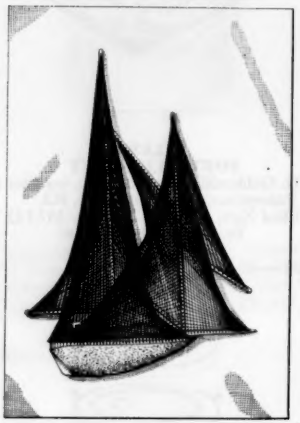
232,641
BULB FOR ELECTRIC LAMP
Richard Katz, Roslyn Heights, N.Y., Jean Lamuniere, Linganore, Md., and Norman Baird, Morris Plains, N.J., assignors to Duro-Test Corporation, North Bergen, N.J.
Filed Feb. 5, 1973, Ser. No. 329,625
Term of patent 14 years
Int. Cl. D26—*04*
U.S. Cl. D26—8



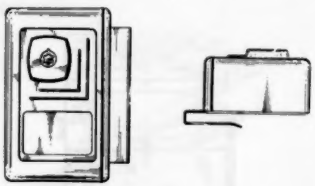
232,642
TELEPHONE SUBSCRIBERS INSTRUMENT
Anthony Crisp Beadle, Cockfosters, Ralph William Parrish, London, and John Graham Brown, Dartford, England, assignors to International Standard Electric Corporation, New York, N.Y.
Filed June 5, 1973, Ser. No. 367,308
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 A



232,643
SHIP MODEL WALL PLAQUE
Francis R. Nartowicz, 204 Fort Worth St., Hampton, Va. 23369
Filed Oct. 13, 1972, Ser. No. 297,314
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D29—23 A

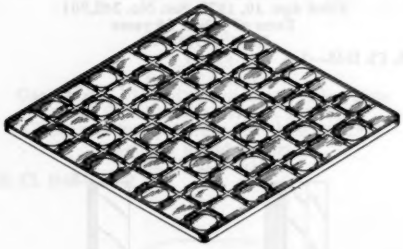


232,644
AUTOMOTIVE VEHICLE KEY SAFE
Iral D. Barrett, P.O. Box 3167, Salem, Oreg. 97302
Filed Jan. 8, 1973, Ser. No. 322,087
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D31—22

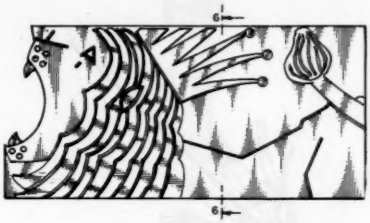


232,645
ELECTRONIC DICE GAME TABLE
David Galoob, 1153 Mission St.,
San Francisco, Calif. 94103
Filed Feb. 22, 1972, Ser. No. 228,435
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 J

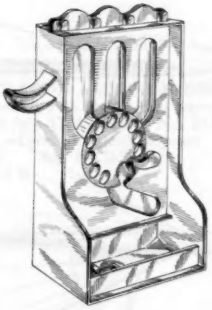
232,646
CHECKERBOARD
Albert Stubbmann, Franklin Lakes, N.J., assignor to
Kohner Bros., Inc., East Paterson, N.J.
Filed June 4, 1973, Ser. No. 366,886
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 SS



232,647
SQUEEZABLE SOUND-PRODUCING BABY TOY
Emil Pomerantz, 43—21 52nd St.,
Woodside, N.Y. 11377
Filed Jan. 26, 1972, Ser. No. 221,123
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 C

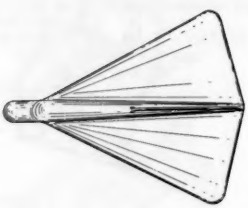


232,648
TOY TELEPHONE BOX
Robert Brass, 1 Fillow St., Westport, Conn. 06880
Filed June 22, 1972, Ser. No. 265,209
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 A



232,649
PROJECTILE FOR A GAME
Phillip H. Carlson and Lawrence E. Erickson, Minneapolis, Minn., assignors to International Telephone and Telegraph Corporation, New York, N.Y.
Filed July 10, 1972, Ser. No. 270,501
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 PP

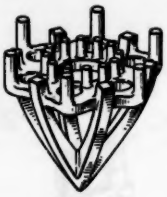
232,650
TOY GLIDER
David A. Martin, Bend, Oreg., assignor to North Pacific Products Co., Bend, Oreg.
Filed July 2, 1973, Ser. No. 375,621
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 HH



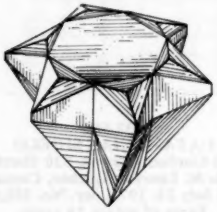
232,651
UPPER HANDLE MEMBER FOR LAWN MOWERS AND THE LIKE
Mario F. Fernandez and Bruce John Rubin, St. Paul, and Richard A. Thorud, Minneapolis, Minn., assignors to The Toro Company, Minneapolis, Minn.
Filed Aug. 10, 1972, Ser. No. 279,379
Term of patent 14 years
Int. Cl. D15—*99, 03*
U.S. Cl. D40—1 A

232,652
GEM
Otto Hoffer, Providence, R.I., assignor to E. H. Ashley & Co., Inc., Providence, R.I.
Filed Apr. 10, 1972, Ser. No. 242,901
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—1 A

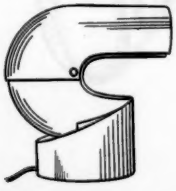
232,653
MOUNT FOR PRECIOUS STONES
Adolf Herman Hess, 7411–1B Yonge St., Apt. 508, Thornhill, Ontario, Canada
Filed Sept. 21, 1972, Ser. No. 290,855
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—1 B



232,654
JEWELRY STONE
Gilbert Golay, Moudon, Switzerland, assignor to Tousdiamants S.A., Vaud, Switzerland
Filed Jan. 5, 1973, Ser. No. 321,143
Claims priority, application Switzerland July 10, 1972
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—1 A



232,655
TABLE LAMP
Gae Aulenti, Via dell'Annunciata 7, Milan, Italy
Filed Sept. 22, 1972, Ser. No. 291,413
Claims priority, application Italy Mar. 23, 1972
Term of patent 7 years
Int. Cl. D26—*05*
U.S. Cl. D48—20 R



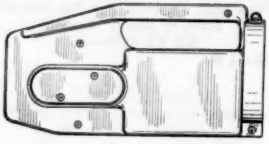
232,656
LAMP
Gae Aulenti, Via dell'Annunciata 7, Milan, Italy
Filed Sept. 22, 1972, Ser. No. 291,415
Claims priority, application Italy Mar. 23, 1972
Term of patent 7 years
Int. Cl. D26—*05*
U.S. Cl. D48—20 A

232,657
LETTER-BOMB DETECTOR
Herbert S. Kulik and Jacob Schachter, both of 100 Ricefield Lane, Hauppauge, N.Y. 11787
Filed Mar. 30, 1973, Ser. No. 346,414
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D52—1 R

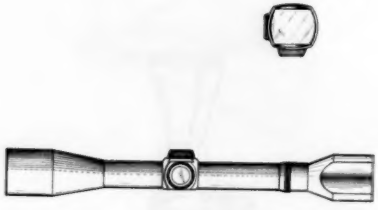
232,658
DRY PET FOOD AGITATOR/DISPENSER
Arthur L. Fassauer, P.O. Box 615, Canyon, Tex. 79015
Filed July 27, 1972, Ser. No. 275,862
Term of patent 14 years
Int. Cl. D30—*03*
U.S. Cl. D52—2 B

232,659
SCALE
Peter M. Cameron, 9 Rosewood Lane, Owings Mills, Md. 21117
Filed Jan. 26, 1972, Ser. No. 221,136
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—6 A

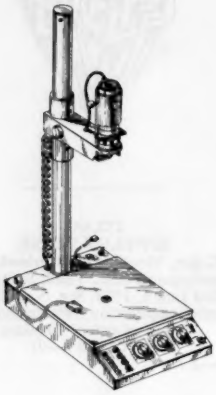
232,660
WHEEL ALIGNMENT HEAD
John D. McKenney, South Laguna, Calif., assignor to Royal Industries, Inc., Osseo, Minn.
Filed Sept. 20, 1972, Ser. No. 290,472
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D52—6 E



232,661
WIDE ANGLE TELESCOPIC SIGHT
John F. Thompson and Donald R. Payton, El Paso, Tex., assignors to W. R. Weaver Company
Continuation-in-part of abandoned design application Ser. No. 255,933, May 22, 1972. This application July 12, 1973, Ser. No. 378,737
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D57—1 E

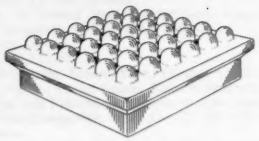


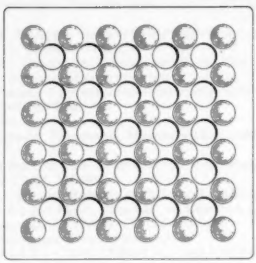
232,662
PHOTOGRAPHIC ENLARGER
Arthur J. Sable, Tall Timbers, Raymond E. Cheney, Niwot, and Kenneth R. Crowe, Boulder, Colo., assignors to Sable Photo Works, Inc., Tall Timbers, Colo.
Filed July 3, 1972, Ser. No. 268,917
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1 Q



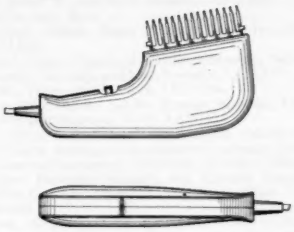
232,663
CATAMENIAL SHIELD
Ronald Gordon Altrows, 320 Harris St., Ville St. Laurent, Quebec, Canada
Filed July 23, 1973, Ser. No. 381,920
Term of patent 14 years
Int. Cl. D24—*99*
U.S. Cl. D83—1 J

232,664
ASHTRAY
Ettore Sottsass, Jr., Milan, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea, Turin, Italy
Filed Apr. 27, 1973, Ser. No. 355,244
Claims priority, application Italy Nov. 2, 1972
Term of patent 14 years
Int. Cl. D27—*03*
U.S. Cl. D85—2 H

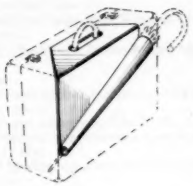




232,665
COMB
Jürgen Greubel, Kronberg, Taunus, Germany, assignor to Braun Aktiengesellschaft, Frankfurt am Main, Germany
Filed Jan. 31, 1973, Ser. No. 328,339
Claims priority, application Germany Oct. 24, 1972
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—8



232,666
HOLDER FOR UMBRELLAS
Brower C. Spransy, 4516 Rynex Drive, Alexandria, Va. 22312, and George B. Spransy, 18 Dog Wood Acre, Chapel Hill, N.C. 27514
Filed Oct. 12, 1972, Ser. No. 297,044
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—1 R



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TO WHOM

PATENTS WERE ISSUED ON THE 3D DAY OF SEPTEMBER, 1974

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. J. M. Research Corporation: *See—*
Malavazos, Arthur J.; and Urdal, Jan, 3,833,169.

Aaron, Albert Glenn, to Passpoint Corporation. Conveyor for wheeled vehicles. 3,832,953, Cl. 104-162.000.

Abbott, Frank R., to United States of America, Navy. Very low frequency sonar projector. 3,833,880, Cl. 340-8.00r.

Abbott Laboratories: *See—*
Liston, Mac D., 3,833,304.

Abe, Jinnosuke; Watanabe, Tetsuo; Take, Teruo; Fujimoto, Kentaro; Fujii, Tadashiro; Hotta, Yasue; Kobari, Sadami; Ishimura, Fumihiro; Kitahora, Nobuya; and Fukushima, Mituru, to Toyo Jozo Kabushiki Kaisha. Production of ampicillin. 3,833,558, Cl. 260-239.10.

Abe, Shigeharu: *See—*
Monma, Yoshinobu; Abe, Shigeharu; Miwa, Ryuichi; and Mitsushima, Eiji, 3,833,429.

Abita, Joseph L.; and Noyes, Carlton F., to United States of America, Navy. Mechanical masking apparatus for producing a pattern on a curved surface. 3,833,298, Cl. 355-125.000.

Abolins, Visvaldis; and Reinhard, Donald L., to General Electric Company. Composition of a polyphenylene ether and an acrylic resin in combination with a diene rubber-containing resin. 3,833,688, Cl. 260-876.00r.

Abrahams, Michael A.; Blacksburg, Alvin Brent; and Rand, Sidney, to Breath-E-Z Corporation. Portable demucosant. 3,833,001, Cl. 128-277.000.

Acosta, Adrian J. Stowable tiedown attachments for pickup truck bodies. 3,833,241, Cl. 280-179.00a.

Acton, Edward M.; Yamamoto, Kazuko; and Stone, Herbert, to Stanford Research Institute. Sweeteners based on syn oximes of 4-(methoxysubstituted)-1-cyclohexene-1-carboxaldehydes. 3,833,654, Cl. 260-566.00a.

Adachi, Kouhei: *See—*
Tominaga, Hiroshi; Takamatsu, Masanobu; and Adachi, Kouhei, 3,832,877.

Adams, Frederick John, to Cam Gears Limited. Integral power steering gear. 3,832,936, Cl. 91-375.00a.

Adams, Gerald E.; Borton, Robert O.; Dabrowski, Alfred J., Jr.; Falkenau, Vernon A.; and Flood, James H., to Uniroyal, Inc. Fluidized bed coating apparatus. 3,832,974, Cl. 118-408.000.

Addressograph-Multigraph Corporation: *See—*
Zawiski, Robert F.; Crider, Albert A.; and Ernohazy, Stephen, 3,833,214.

Adelsberg, Lee M.; Carson, Michael C.; Forker, Ray B., Jr.; and Rittler, Hermann L., to Corning Glass Works. Preform core bodies. 3,833,385, Cl. 106-38.900.

Adomaithis, Domas, to Continental Can Company, Inc. Process for closing tubular parisons and blow molding hollow containers therefrom. 3,833,700, Cl. 264-96.000.

Aerojet-General Corporation: *See—*
Glad, Thomas J.; and Schmidt, Willfred G., 3,833,041.

Aeroquip Corporation: *See—*
Ritchie, Rex E.; and Welker, John B., 3,832,831.

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Creskoff, Jacob J., 3,833,251.

Aerpat A.G.: *See—*
Charman, Bernard William, 3,832,880.

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Agence Nationale de Valorisation de la Recherche (Anvar): *See—*
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Agence Nationale de Valorisation la Recherche (Anvar): *See—*
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Agency of Industrial Science and Technology: *See—*
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AGFA-Gevaert: *See—*
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Agfa-Gevaert AG: *See—*
Wick, Richard; Winkler, Alfred; and Wagensonner, Eduard, 3,833,913.

Agfa-Gevaert N.V.: *See—*
Hazenbosch, Edwin Hendrik; and Poot, Albert Lucien, 3,833,373.

Aguet, Emile, to Sulzer Brothers Ltd. Combined gas and steam power-plant with supplementary steam mixing. 3,832,845, Cl. 60-39.18b.

Aidn, Martin; and Furtwa-Ngler, Gerhard, to Siemens AG. Contact socket for electrical devices, such as relays. 3,833,879, Cl. 339-220.00r.

Airola, Ellis J.: *See—*
Grisik, John J.; and Airola, Ellis J., 3,833,414.

Aisin Seiki Kabushiki Kaisha: *See—*
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A.J. Industries, Inc.: *See—*
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Ajinomoto Co., Inc.: *See—*
Akamatsu, Akira; Togo, Kazushi; and Iwatsuki, Makoto, 3,833,684.
Ariyoshi, Yasuo; Yamatani, Tetsuo; Uchiyama, Noboru; Yasuda, Naohiko; Toi, Koji; and Sato, Naotake, 3,833,553.
Ariyoshi, Yasuo; and Toi, Koji, 3,833,554.
Kubota, Koji; Onoda, Takiko; Kamijo, Hirotaka; Yoshinaga, Fumihiro; and Okumura, Shinji, 3,833,473.

Akamatsu, Akira; Togo, Kazushi; and Iwatsuki, Makoto, to Ajinomoto Co., Inc. Stable, homogeneous solutions of polyalkyl glutamates containing dissolved elastomers. 3,833,684, Cl. 260-857.0un.

Akashi, Goro; Fujiyama, Masaski; and Yamada, Yasuyuki, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 3,833,412, Cl. 117-240.000.

Akin, Cavit, to Standard Oil Company. Water-soluble whippable protein material and process for producing same. 3,833,552, Cl. 260-112.00r.

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Bakke, Jan Magnus, 3,833,667.

Aktiebolaget Svenska Flaktfabriken: *See—*
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Eskridge, Brewster B.; Fink, Roger H.; and Lyon, Boyce M., 3,832,759.

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Albrecht, William L.; and Fleming, Robert W., to Richardson-Merrrell Inc. Carbazole derivatives. 3,833,596, Cl. 260-293.610.

Albright and Wilson Limited: *See—*
Pike, Marshall; and Routledge, Alan Watson, 3,833,628.

Albright, Robert W.: *See—*
Barton, Sterling C.; Archibald, James B.; and Albright, Robert W., 3,833,826.

Alburn, Harvey E.: *See—*
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Fetner, Robert H.; and Alderman, John C., Jr., 3,833,796.

Alderman, Willis H. Multiple use reversible carrying case and system. 3,833,098, Cl. 190-11.000.

Alduk, Frank P. Pallet loading apparatus. 3,833,132, Cl. 214-6.00g.

Alesna, Robert E.: *See—*
Elkins, William; Connell, Eugene W.; and Alesna, Robert E., 3,832,735.

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Nilsson, Rutger Einar Viktor, 3,832,970.

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Allen, Joseph H., to Polaroid Corporation. Folding camera. 3,833,914, Cl. 354-198.000.

Allen, Robert E.; and Calhoun, Clyde D., to General Electric Company. Apparatus for alloy microstructure control. 3,833,207, Cl. 266-2.00r.

Allied Chemical Corporation: *See—*
Lazarus, Stanley David; and Dementi, Brian Armstead, 3,833,542.
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Allis-Chalmers Corporation: *See—*
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Allmanna Svenska Elektriska Aktiebolaget: *See—*
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Alm, Robert M.: *See—*
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Alsina, Pierre A.: *See—*
MacPherson, Roger; and Alsina, Pierre A., 3,832,786.

Altherr, Russel George. AMSTED Industries Incorporated. 3,833,131, Cl. Coupler locklift hole cap.

Aluminum Company of America: *See—*
Gayner, Herbert; and Smith, David A., 3,832,963.
Rolles, Rolf, 3,832,962.

Amberg, Ralph G.; and Amberg, Stephen W., to Owens-Illinois, Inc. Apparatus for forming containers of thermoplastic material. 3,833,332, Cl. 425-387.00b.

Amberg, Stephen W.: *See—*
Amberg, Ralph G.; and Amberg, Stephen W., 3,833,332.

Ambrogi, Vittori; Logemann, Willy; Parenti, Marcantonio; and Tommasini, Raffaele, to Erba, Carlo, S.p.A. Pyrazinoy laklylbenzenesulfonylureas and process for their preparation. 3,833,578, Cl. 260-250.00r.

Ambrose, Jere B., to Northern Fibre Products Company. Reinforced foam plastic seat bun and method of molding same. 3,833,454, Cl. 161-159.000.

Amchem Products, Inc.: *See—*
Cooke, Anson R.; and Gallagher, Nancy E., 3,833,350.

Amerace Esna Corporation: *See—*
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American Can Company: *See—*
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American Cyanamid Company: *See—*
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American Home Products Corporation: *See—*
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American Hospital Supply Corporation: *See—*
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American Optical Corporation: *See—*
Grolman, Bernard; and Lavallee, Robert G., 3,832,890.

American Polymers, Inc.: *See—*
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Ammann, Heinz, to Sulzer Brothers Ltd. Tubing for a combustion chamber. 3,832,979, Cl. 122-6.00a.

Amoco Production Company: *See—*
Palm, John W., 3,833,716.

AMP Incorporated: *See—*
Cassarly, James William; Graeff, Norwood Claude; Hooper, Dean Roosevelt; Pauza, William Vito; Sheesley, Wilmer Lee; and Youngfleish, Frank Christian, 3,833,869.
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Amtmann, Rudolf; and Diedrich, Bernd, to Farbwerke Hoechst Aktiengesellschaft. Catalyst for the preparation of polyolefins. 3,833,515, Cl. 252-429.00b.

Amwake, Harvey Edward, to Dresser Industries, Inc. Center plate vertical wear ring. 3,832,954, Cl. 105-199.00c.

Anders, Edward O., to Global Marine Inc. Pile driving. 3,832,858, Cl. 61-53.500.

Andersen Corporation: *See—*
Peterson, Lawrence W.; Gallo, Thomas J.; Peterson, Kenneth L.; and Garofalo, Donald L., 3,833,326.

Andersen, Poul, to Allegheny Ludlum Industries, Inc. Muffle furnace. 3,833,208, Cl. 266-3.00r.

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Anderson, Ingvar G.: *See—*
MacKenzie, Harold B.; Anderson, Ingvar G.; and Montgomery, William T. S., Jr., 3,833,117.

Anderson, Perry W.: *See—*
Glabe, Elmer F.; Anderson, Perry W.; and Laftsidis, Stergios, 3,833,413.

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Andersson, Bror Adolf. Ski-holding device with mountings for clamp straps. 3,833,160, Cl. 224-42.10f.

Andra, Klaus: *See—*
Beissel, Dieter; Dinter, Peter; and Andra, Klaus, 3,832,973.

Andreasen, Frederick J.: *See—*
Neitzel, Ulrich E. G.; and Andreasen, Frederick J., 3,833,504.

Ang, Choh-Yi; Bailey, Robert F.; and Ogren, John R., to TRW Inc. High stability thin film alloy resistors. 3,833,410, Cl. 117-227.000.

Angle, Milton A.; Blair, Gerald E.; and Maier, Clarence C., to Eastman Kodak Company. Method for molding glass lenses. 3,833,347, Cl. 65-32.000.

Annapolis Yacht Yard, Inc.: *See—*
Hiatt, Henry G., 3,832,812.

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Feuer, Laszlo; Nogradi, Mihaly; Gottsegen, Agnes; Vermes, Borbala; Streliszky, Janos; Wolfner, Andras; Farkas, Lorant; Antus, Sandor; and Toth, Maria Kovacs, 3,833,730.

Aoi, Takahisa: *See—*
Atoji, Nobuhisa; and Aoi, Takahisa, 3,833,770.

Aoki, Katashi. Reciprocating injection molding apparatus and mold clamping means. 3,833,330, Cl. 425-247.000.

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Apache Corporation: *See—*
Wake, Harold E., 3,833,246.

Appleby, Paul E.; Christie, Christopher E.; and Woodhall, Edwin S., to Goodyear Tire & Rubber Company, The. Tire building method. 3,833,437, Cl. 156-130.000.

Apstein, Maurice; and United States of America, Army. Proximity fuze. 3,833,905, Cl. 343-7.0pf.

Archibald, James B.: *See—*
Barton, Sterling C.; Archibald, James B.; and Albright, Robert W., 3,833,826.

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Ingram, Alvin R., 3,833,401.

Arendt, Ronald H., to General Electric Company. Ceramic articles and method of sealing ceramics. 3,833,349, Cl. 65-43.000.

Arens, Cornelis G. Strip material coiling machine. 3,832,876, Cl. 72-12.000.

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Reusser, Fritz; and Argoudelis, Alexander D., 3,833,475.

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Hall, Rober P., 3,833,926.

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Kaneko, Tutomu; Turumi, Takashi; Emori, Shuichi; and Ito, Ken, 3,833,438.
Misumi, Teruyuki; Shimodoi, Yutaka; and Ochi, Kazushi, 3,833,457.

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Takeda, Hideomi, 3,833,807.

Aschauer, George R., to Twin Disc, Incorporated. Control system for a power transmission clutch. 3,833,100, Cl. 192-85.000.

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Schoeps, Knut Christian, 3,832,916.

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Atwood Corporation: *See—*
Stewart, Donald E.; and Stonehouse, Thomas J., 3,833,800.

Aubert, Jean-Paul; Longin, Robert; and Millet, Jacqueline, to Agence Nationale de Valorisation de la Recherche (Anvar). Asporogenic protease-producing strains of bacillus subtilis. 3,833,474, Cl. 195-65.000.

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Chattaway, Keith; Gillings, Richard William; and Austin, Philip, 3,833,028.

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Auto Crane Company: *See—*
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Automated Reference Corporation: *See—*
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Autoscan, Inc.: *See—*
Pelta, Edmond R., 3,832,894.

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Reed, Charles F.; and Komendat, David T., 3,833,456.

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Babcock, John C.; and Campbell, J. Alan, to Unjohn Company, The. Crystalline 25-hydroxy-cholecalciferol hydrate and structurally related compounds. 3,833,622, Cl. 260-397.200.

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Back, Carl F., to Sanderson-Cyclone Drill Company, The. Impact apparatus. 3,833,069, Cl. 173-120.000.

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Backwell, James, 20% to Lee, Raymond, Organization, Inc. Foldable step stool. 3,833,089, Cl. 182-91.000.

Badische Anilin- & Soda-Fabrik Aktiengesellschaft: *See—*
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Badische Anilin-& Soda-Aktiengesellschaft: *See—*
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Ang, Choh-Yi; Bailey, Robert F.; and Ogren, John R., 3,833,410.

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Balasic, George, to Carol Stamping and Manufacturing Inc. Paper roll holder. 3,833,180, Cl. 242-55.200.

Balaz, Joseph K.; Kelly, Richard A.; and Schulze, Wolfgang, to Flinn & Dreffein Engineering Company. Modular insulation of fibrous material. 3,832,815, Cl. 52-227.000.

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Banerjee, Bani; Black, Sigmund; and Gangal, Mukund, to Lee-Norse Company. Pins for mine and tunnel roofs and other structures. 3,832,930, Cl. 85-30.000.

Barden, James D.: *See—*
Lucero, Daniel P.; Barden, James D.; and Paljug, Joseph W., 3,833,016.

Barker, Ronald C., to Empire Newspaper Supply Corporation, mesne. Radiation method for making a surface in relief. 3,832,948, Cl. 101-401.100.

Barnea, Daniel I.: *See—*
Bahl, Lalit R.; Barnea, Daniel I.; and Kobayashi, Hisashi, 3,833,900.

Barnette, Jon H., to United States of America, Atomic Energy Commission. Multiple code coded mechanism. 3,832,873, Cl. 70-291.000.

Bartel, Roger P., 20% to Lee, Raymond, Organization, The. Foot pedal switch. 3,833,782, Cl. 200-86.500.

Barton, Sterling C.; Archibald, James B.; and Albright, Robert W., to General Electric Company. Gas-cooled dynamoelectric machine. 3,833,826, Cl. 310-52.000.

Bartram, Nial C., to Schick Incorporate. Nestabe hair dryer with tensioned positioning. 3,832,789, Cl. 34-99.000.

BASF Wyandotte Corporation: *See—*
Gehm, Robert; and Hutchison, John J., 3,833,669.

Bassett, Max, to Shields, C. Nelson Inc., trustee. Pressure grouting. 3,832,857, Cl. 61-46.000.

Bassett, William W., to Honeywell Inc. Temperature compensated snap-beam actuator. 3,833,876, Cl. 337-370.000.

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Bauer, Donald J.: *See—*
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Baumann, Eduard, to Zellweger Ltd. Remote control with selective evaluation of impulse patterns. 3,833,886, Cl. 340-167.00r.

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Baumann, Marcus; and Bosshard, Hans, to Ciba-Geigy Corporation. Process for the manufacture of dimethylmaleic anhydride. 3,833,619, Cl. 260-346.800.

Bausch & Lomb Incorporated: *See—*
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Baxter Laboratories, Inc.: *See—*
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Bayer Aktiengesellschaft: *See—*
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Buchel, Karl Heinz; and Hammann, Ingeborg, 3,833,602.
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Bayer Aktiengesellschaft, mesne: *See—*
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Bayerisches Leichtmetallwerk Graf Bluecher von Wahlstalt KG: *See—*
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Beaudoin, Laurent W.: *See—*
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Bebb, William Hobart; and Gustafson, Gary Boyd, to Eastman Kodak Company. Energy absorbing mounting for optical modulation assemblies. 3,833,295, Cl. 355-32.000.

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Beck, Erich. Method of comminuting synthetic-resin articles. 3,833,178, Cl. 241-3.000.

Beck, Gunther; and Holtschmidt, Hans, to Bayer Aktiengesellschaft. Certain 4-chlorothiazoles and process for preparing same. 3,833,601, Cl. 260-302.00r.

Becton, Dickinson and Company: *See—*
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Beehive Medical Electronics, Inc.: *See—*
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Beehler, Vernon D.: *See—*
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Behling, Rolf-Dieter; Oelsner, Manfred Wolfgang; and Zenke, Erich Gunther, to British Petroleum Company Limited, The. Bituminous composition. 3,833,528, Cl. 260-28.5as.

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Beil, Ralph G., to Schlumberger Technology Corporation. Neutron logging of formation porosity and chlorinity. 3,833,809, Cl. 250-270.000.

Beissel, Dieter; Dinter, Peter; and Andra, Klaus, to Kalle Aktiengesellschaft. Apparatus for the reduction of a multi-layer sheet material of microporous structure. 3,832,973, Cl. 118-50.000.

Belford, Robert O. Charcoal firebox. 3,832,989, Cl. 126-25.00r.

Belke Manufacturing Company: *See—*
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Belke, Ralph E., to Belke Manufacturing Company. Cable connector contact. 3,833,497, Cl. 204-279.000.

Bell & Howell Company: *See—*
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Haake, Robert, 3,833,224.

Bell, Arthur H., to International Business Machines Corporation. Automatic storage apparatus. 3,833,280, Cl. 312-319.000.

Bell, Robert F.; Dinger, James R.; Laymon, Marvin D.; and Pazemenas, Vytautas V., to GTE Sylvania Incorporated. Intrusion detection system and method using an electret cable. 3,833,897, Cl. 340-261.000.

Bell Telephone Laboratories, Incorporated: *See—*
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Kaminow, Ivan Paul; and Weber, Heinz Paul, 3,833,284.
Kammlott, Guenther Wilhelm; and Sinclair, William Robert, 3,833,396.
Logan, Ralph Andre; Schwartz, Bertram; Tracy, Joseph Charles, Jr.; and Wiegmann, William, 3,833,435.
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Taylor, Gary Newton; and White, Donald Lawrence, 3,833,287.
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Bellot, Jean; and Hugo, Michel, to Societe des Acieries Du Manoir-Pompey. Refractory iron-base alloy resisting to high temperatures. 3,833,358, Cl. 75-122.000.

Benckiser-Knapsack GmbH: *See—*
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Bendix Corporation, The: *See—*
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Bennett, Donald Alfred; and Duck, Edward William, to International Synthetic Rubber Company Limited, The. Latex preparation. 3,833,532, Cl. 260-29.7sq.

Bennington, William E. Dental floss dispenser. 3,833,009, Cl. 132-91.000.

Benson, Harvey D.: *See—*
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Benteler, Erich; Schirp, Wilhelm; Menne, Heinz; Eckhardt, Otto; and Mowe, Wilhelm, to Benteler-Werke Aktiengesellschaft. Installation for the conditioning of air. 3,833,053, Cl. 165-60.000.

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Benthos, Inc.: *See—*
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Benz, August. Device for holding operating tools at elevated heights. 3,833,193, Cl. 248-2.000.

Benzeev, Dan: *See—*
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Bertele, Ludwig: *See—*
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Bertrand, Jean-Noel Marie; and Vaerman, Joseph Marie, to Labofina S.A. Process for the selective oxidation of ketones. 3,833,625, Cl. 260-408.000.

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Bianchi, Giuseppe; and Nidula, Antonio E., to Oronzio de Nora Impianti Elettrochimici S.p.A. Process for decomposing alkali metal amalgams into mercury, hydrogen and alkali metal hydroxide solutions. 3,833,357, Cl. 175-121.000.

Bicher, Haim I.; and Sorenson, Lon A., to Mediscience Corporation. Cardiac monitor. 3,832,994, Cl. 128-2.06a.

Bick, Maurice; and Lochet, Jean A., to Auric Corporation. Gold electroplating baths and process. 3,833,488, Cl. 204-46.00g.

Bidard, Rene, to Compagnie Electro-Mecanique. Liquid solutions expanded along a curvilinear surface. 3,833,480, Cl. 203-88.000.

Bien, Hans-Samuel: *See—*
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Bierman, Clarence R.; and Welks, John D., to M & T Chemicals Inc. Metal-polymer composites and methods for their preparation. 3,833,458, Cl. 161-216.000.

Bigbie, Samuel E.; and Hull, Roger C., to International Business Machines Corporation. Badge or credit card reading system with integral status monitoring. 3,833,884, Cl. 340-147.01p.

Bimond, Jean-Pier: *See—*
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Binks, Ronald: *See—*
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Bins, Cornelis G., to N.V Rubberfabriek Vredestein. Outer cover or tyre. 3,833,040, Cl. 152-330.000.

Birnath, Reinhold: *See—*
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Bizot, Jean; Courteix, Jean; and Philipot, Jean-Pierre, to Rhone-Poulenc S.A. Process for the preparation of 3,5-diiodo-4-hydroxybenzonitrile or 3-iodo-4-hydroxy-5-nitro-benzonitrile. 3,833,490, Cl. 204-78.000.

BKR, Inc.: *See—*
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Black, Sigmund: *See—*
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Black, Sivalls & Bryson, Inc.: *See—*
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Blackett, Hill, Jr. Applicator for hair. 3,833,008, Cl. 132-85.000.

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Blair, Gerald E.: *See—*
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Blake, James D.: *See—*
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Vazquez, Jose A.; and Blake, Lawrence W., 3,833,004.

Blake, Robert L.; Blake, Charles N.; and Blake, James D. Means and method for treating trees. 3,832,803, Cl. 47-57.500.

Blaschek, Otto. Motion picture camera comprising an externally attached detachable cassette. 3,833,292, Cl. 352-77.000.

Bloch, Herman S.: *See—*
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Bloedel, MacMillan, Limited: *See—*
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Bloscop: *See—*
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Blosse, Jean Charles Joseph, to Bloscop. Device for actuating an alarm in the case of breaking in. 3,833,899, Cl. 340-274.000.

Blu, Gilbert: *See—*
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Blum, Robert, to Coin Security Corp., The. Vandal-proof central coin receptacle. 3,833,104, Cl. 194-1.00b.

Bobel, David J.; and Lotter, Robert F., to Skil Corporation. Safety slide switch. 3,833,784, Cl. 200-157.000.

Boehringer Ingelheim G.m.b.H.: *See—*
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Bohl, Walter, to Heye, Herman, Firma. Device for testing and/or capping of glass bottles. 3,832,892, Cl. 73-94.000.

Bohm Harald: *See—*
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Bohnenkamp, Gitta: *See—*
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Bollmann, Robert Henry; and Richards, Guy Curtis, to American Can Company. Two position pull tab easy-open container component. 3,833,144, Cl. 220-267.000.

Bollyky, L. Joseph, to Pollution Control Industries, Inc. Method of producing ozone. 3,833,492, Cl. 204-176.000.

Bomberger, Howard B., Jr.; and Seagle, Stanley R., to RMI Company, United States Steel Corporation and National Distillers and Chemical Corporation. Titanium-base alloy and method of improving creep properties. 3,833,363, Cl. 75-175.500.

Bomstein, Ralph A., to General Mills, Inc. Texturizing materials for foods. 3,833,744, Cl. 426-212.000.

Boniface, Arthur, to Dorr-Oliver Incorporated. System for recovery of fiber from paper mill effluent, including a dieve bend screen. 3,833,468, Cl. 162-264.000.

Bonori, Maurizio; Franconi, Cafiero; and Galuppi, Paolo, to Consiglio Nazionale delle Richerche. Multichannel spin resonance frequency memory device. 3,833,931, Cl. 340-173.0nc.

Boorman, Earl D., Jr., to General Electric Company. Ice tunnel mounting. 3,832,863, Cl. 62-298.000.

Booth, Alfred E., to Raytheon Company. Dual balanced reciprocal waveguide phase shifter. 3,833,868, Cl. 333-98.00r.

Borden, Inc.: *See—*
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Bordowsky, Karl Heinz: *See—*
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Bork, John Fred, to Lubrizol Corporation, The. Oil-soluble esters of monocarboxylic acids and polyhydric or aminoalcohols. 3,833,624, Cl. 260-404.500.

Borodin, Valerian Alexeevich: *See—*
Loschilin, Evgeny Dmitrievich; Borodin, Valerian Alexeevich; Zabotin, Alexandr Alexandrovich; Onikov, Eduard Arshakovich; and Galperin, Alexandr Lvovich, 3,833,025.

Borsum, Adolph W.; and Borsum, William K. Safety dispensing container closure. 3,833,147, Cl. 221-202.000.

Borsum, William K.: *See—*
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Bosshard, Hans: *See—*
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Bossons, Walter Howard, to Masson Scott Thrissell Engineering Limited. Rotary drive controls. 3,833,843, Cl. 318-11.000.

Boucris, Hubert, to Compagnie Generale d'Automatisme. . 3,833,452, Cl. Self-adhering label.

Boutelant, Paul, to International Standard Electric Corporation. Microwave switching matrix. 3,833,866, Cl. 333-7.00d.

Bouwhuis, Gijsbertus: *See—*
Compaan, Klaas; and Bouwhuis, Gijsbertus, 3,833,769.

Boyer, Joseph E., to Owens-Illinois, Inc. Method for making blown plastic articles. 3,833,702, Cl. 264-111.000.

BP Chemicals International Limited: *See—*
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Braband, Edward C.: *See—*
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Brabel, Joseph D.: *See—*
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Brackenridge, David R., to Ethyl Corporation. Recovery of brominated biphenyl. 3,833,674, Cl. 260-649.0dp.

Braginetz, Paul A., to Morris, Philip, Incorporated. Magazine holding razor blade cartridges in floating manner. 3,833,146, Cl. 221-66.000.

Bran & Luble: *See—*
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Brandt, Eckhard; and Staaman, Otto, to Automatic Druckmaschinenfabrik Dr. W. Hinniger und Sohne, Firma. Rotary print press including a device for punching rows of perforations in continuous paper webs. 3,832,925, Cl. 83-174.000.

Brannock, Kent C.; and Hargis, Charles W., to Eastman Kodak Company. Synthesis of alkylated phenols from carbonyl compounds. 3,833,673, Cl. 260-621.00r.

Branson Instruments, Incorporated: *See—*
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Braun Aktiengesellschaft: *See—*
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Breil, Heinz: *See—*
Ziegler, Karl; Martin, Heinz; Breil, Heinz; and Holzkamp, Erhard, 3,833,551.

Brennan, James A., to Mobil Oil Corporation. Stable and pumpable liquid aluminum chloride and bromide complexes. 3,833,678, Cl. 260-683.15b.

Breuw, Heinz; Mischke, Hans-Jurgen; and Lippeck, Franz; deceased (by Lippeck, Irmgard; Bohnenkamp, Gitta; and Lippeck, Marion; heirs), to Fried. Krupp, Gesellschaft mit beschrankter Haftung. Apparatus for monitoring and taking gas samples in shaft furnaces 3,832,904, Cl. 73-421.50a.

Brewster, Franklin C., to Motorola, Inc. One piece plastic tuning shaft for a radio receiver or the like device. 3,832,908, Cl. 74-10.330.

Bridgestone Tire Company, Limited: *See—*
Watanabe, Kei; Yoshimura, Nobuya; Saito, Tasuku; Tomita, Naotaka; and Uruta, Hisaya, 3,833,043.

Bridgman, Henry. Medical asporation system. 3,833,000, Cl. 128-276.000.

Briel, Ernest M., Jr. Relocatable building module. 3,832,811, Cl. 52-69.000.

Briel, Ernest M., Jr. Relocatable building module and shipping crate. 3,832,956, Cl. 108-55.000.

Briley, Joseph C.: *See—*
Moksu, Alan W.; and Briley, Joseph C., 3,833,836.

Bristol-Myers Company: *See—*
Holdrege, Charles Truman, 3,833,570.

British Aircraft Corporation: *See—*
Goldsmith, Hugh Arthur, 3,832,804.

British Petroleum Company Limited, The: *See—*
Behling, Rolf-Dieter; Oelsner, Manfred Wolfgang; and Zenke, Erich Gunther, 3,833,528.
Desty, Denis Henry; and Young, Christopher John, 3,833,337.

Britten, George C. Press construction. 3,833,333, Cl. 425-406.000.

Brooks, Norman B., to Pass-Port Systems Corporation. Low leakage vacuum valve and chamber using same. 3,833,018, Cl. 137-625.470.

Brown, Edgar D., Jr., to General Electric Company. Silicone fluids useful as hydraulic fluids. 3,833,505, Cl. 252-78.000.

Brown, James L.; and Harris, Orval A., to Mallinckrodt Chemical Works. Radionuclide generator production method. 3,833,509, Cl. 252-301.10r.

Brown, Robert B. Grading apparatus. 3,833,119, Cl. 209-99.000.

Brown, Robert L.: *See—*
Neskora, Daniel R.; Brown, Robert L.; and Sliepcevich, Cedomir M., 3,833,351.

Brucker, Donald, to Continuous Curve Contact Lenses, Inc. Laser apparatus for fenestration of contact lenses. 3,833,786, Cl. 219-121.001.

Brugerolle, Jean-Renaud; and Petit, Pierre, to L'Air Liquid, Societe Anonyme Pour l'Etude et l'Exploitation des Procedes George Claude. Process and installation for the oxidation of an oxidisable substance. 3,833,477, Cl. 195-109.000.

Brunner, Alfred, to Sulzer Brothers Ltd. Tubing for a combustion chamber. 3,832,978, Cl. 122-6.00a.

Brunswick Corporation: *See—*
Singleton, Jack S.; and Mc Caffery, William, Jr., 3,833,121.

Bryant, Charles Brate. Telescopic belt tightener. 3,832,910, Cl. 74-242.14r.

Bryant, Emerson C.: *See—*
Mallory, Edwin E.; and Bryant, Emerson C., 3,833,445.

Bsumek, Peter J.: *See—*
Schochet, Bernard J.; and Bsumek, Peter J., 3,833,126.

Buchanan, Robert A.: *See—*
Wickersheim, Kenneth A.; and Buchanan, Robert A., 3,833,862.

Buchel, Karl Heinz; and Hammann, Ingeborg, to Bayer Aktiengesellschaft. N-carbamoyl- and-N-thiocarbamoyl-4,5,6,7-tetrahydrobenz-triazoles. 3,833,602, Cl. 260-308.00b.

Buchel, Karl-Heinz; Draber, Wilfried; Regel, Erik; and Haberkorn, Axel, to Farbenfabriken Bayer Aktiengesellschaft. 1-(λ,λ-Disubstituted 4-phenoxy-benzyl) imidazoles. 3,833,603, Cl. 260-309.000.

Buckbee-Mears Company: *See—*
Hillis, Benjamin F.; Klint, Russell D.; and Cross, Willaim D., 3,833,436.
Jacobus, Dan, 3,833,482.
Olson, Roger A.; and Mentone, Pat F., 3,833,481.

Bucksch, Manfred: *See—*
Dach, Hansjorg; Bordowsky, Karl Heinz; and Bucksch, Manfred, 3,832,934.

Bucyrus-Erie Company: *See—*
Lang, David M.; Nelmark, Jack D.; and Smith, Matthew, 3,832,918.

Buendia, Jean: *See—*
Martel, Jacques; and Buendia, Jean, 3,833,564.

Bullmann, Rolf: *See—*
Klopper, Friedrich; and Bullmann, Rolf, 3,833,324.

Burchill, Roy Terry: *See—*
Frick, Eric Lionel; and Burchill, Roy Terry, 3,833,736.

Burkhart, Merle K.; Fell, Ferol S.; and Case, Cecil L., to Hesston Corporation. Windrower having rear mounted overtop swingable tongue. 3,832,837, Cl. 56-218.000.

Burmah Oil Trading Limited: *See—*
Elliott, John Scotchford; Crail, Ian Robert Henry; and Askew, Herbert Frank, 3,833,501.
Field, Peter Graham Spencer, 3,833,613.

Burns, Richard H.: *See—*
Schwan, Thomas J.; Honkomp, LeRoy J.; Castellion, Alan W.; and Burns, Richard H., 3,833,586.

Burns, Richard H.; Hosack, Donald R.; and Welker, Helmut, to Bausch & Lomb Incorporated. Measuring apparatus using the moire fringe concept of measurement. 3,833,303, Cl. 356-169.000.

Burough, Irvin G.: *See—*
Porter, William A.; Burough, Irvin G.; and Kline, Donald D., 3,833,305.

Burrell, William E., to Grace, W. R. & Co. Apparatus and method for evacuating packages. 3,832,824, Cl. 53-22.00b.

Burroughs Corporation: *See—*
Gates, Robert R.; and Seeley, Dunham B., 3,833,448.
Gosnell, Earl J., 3,833,395.
Macker, John Arthur, 3,833,930.
Schmalzriedt, Truman T., 3,833,846.

Burt, Harold R.: *See—*
Catto, Kenneth A.; and Burt, Harold R., 3,833,186.

Busby, John W., to Busby Venture Corporation. Character reading system. 3,833,882, Cl. 304-146.30j.

Busby Venture Corporation: *See—*
Busby, John W., 3,833,882.

Bush, Carl D.: *See—*
Linn, Donald F.; Bush, Carl D.; and Taylor, Frederick P., 3,833,099.

Butler, Tony W., Jr. Wind and solar energy conversion system for multi-story buildings. 3,832,853, Cl. 60-641.000.

Butler, Truman G. One-man truck-mounted camper. 3,833,253, Cl. 296-23,0mc.

Butter, Karl; Tuscher, Otto; and Christl, Manfred, to Messerschmitt-Bolkow-Blohm GmbH. Regeneratively cooled rocket combustion chamber with slots between cooling channels. 3,832,847, Cl. 60-267.000.

Buzy-Debat, Jean Marie C. S.: *See—*
Tournier, Christian Yves; and Buzy-Debat, Jean Marie C. S., 3,833,890.

Cable Covers Limited: *See—*
Edwards, Hugh J. W., 3,833,706.

Cairns, Elton J.: *See—*
Rubischko, Richard J.; Cairns, Elton J.; and Steunenberg, Robert K., 3,833,421.

Caldwell, John R.; and Stemmle, Denis J., to Xerox Corporation. Reproduction system and method with simplex and duplex modes of operation. 3,833,911, Cl. 346-74.0cs.

Caldwell, Knox V. Drip emitter device. 3,833,176, Cl. 239-542.000.

Calhoun, Clyde D.: *See—*
Allen, Robert E.; and Calhoun, Clyde D., 3,833,207.

Callander, George C.: *See—*
Sheahan, Desmond F.; and Callander, George C., 3,832,761.

Cam Gears Limited: *See—*
Adams, Frederick John, 3,832,936.
Hobbs, Ronald Henry, 3,833,309.

Cammann Manufacturing Company: *See—*
Roach, Jere H., 3,833,785.

Campbell, Hubert J., to Miller Bros., Co., (1962) Limited, The. Single pulping system for multiple pulp stocks used in paperboard machine. 3,833,465, Cl. 162-129.000.

Campbell, J. Alan: *See—*
Babcock, John C.; and Campbell, J. Alan, 3,833,622.

Campiglia, Giuseppe. Flushing tank for water closet or the like. 3,832,739, Cl. 4-41.000.

Camras, Marvin, to IIT Research Institute. Video transducing electric circuits. 3,833,920, Cl. 360-33.000.

Camras, Marvin; and Galus, Stanley A., to IIT Research Institute. Indexing system with manual or automatic multichannel and with manual fine adjustment. 3,833,923, Cl. 360-106.000.

Canadian Industries Limited: *See—*

Murray, Charles Robertson, 3,833,166.

Canron, Inc.: *See—*
Hurni, Hans, 3,832,952.

Cappelletti, Richard R., to Lambda Development Ltd. Orthopedic device for combination with a plaster cast. 3,832,997, Cl. 128-85.000.

Carbo-Scrap, Inc., mesne: *See—*
Holowaty, Michael O.; and Stirling, Harold T., 3,833,343.

Carborundum Company, The: *See—*
Carpenter, James H., Jr.; and Nalley, Don B., 3,832,809.
Parris, John L.; and Oldham, Herman J., 3,833,112.

Carbrey, Robert Lawrence, to Bell Telephone Laboratories, Incorporated. Ripple free counter. 3,833,822, Cl. 307-225.00c.

Cardinal, Philip, to Conat Industries Limited, mesne. Humidifying unit. 3,833,052, Cl. 165-20.000.

Cardwell, Joseph R.; and Berry, True J. Fishing rod holder. 3,832,796, Cl. 43-25.000.

Carlos, Donald Dante; and Hicks, Darrell D., to Celanese Coatings & Specialties Company. Deodorization of sulfide containing polymers. 3,833,550, Cl. 260-80.750.

Carlson, Elmer A., to International Telephone and Telegraph Corporation. Temperature control system and thermostat therefor. 3,833,859, Cl. 330-69.000.

Carlson, Norman R.; Haley, Paul H.; and Enns, Mark K., to Westinghouse Electric Corporation. System and method for monitoring transient stability in a hybrid loadflow computer arrangement with transient stability analysis capability. 3,833,927, Cl. 444-1.00.

Carlson, Peter S.; Smith, Harold H.; and Dearing, Rosemarie D., to United States of America, Atomic Energy Commission. Fertile interspecific hybridization cell fusion for higher plants. 3,832,801, Cl. 47-58.000.

Carmet Company: *See—*
Fabeck, Richard J., 3,832,921.

Carol Stamping and Manufacturing Inc.: *See—*
Balasic, George, 3,833,180.

Carpenter, James H., Jr.; and Nalley, Don B., to Carborundum Company, The. Method for removing wustite scale. 3,832,809, Cl. 51-320.000.

Carr, Jack: *See—*
Hall, George E.; and Carr, Jack, 3,832,835.

Carson, Michael C.: *See—*
Adelsberg, Lee M.; Carson, Michael C.; Forker, Ray B., Jr.; and Rittler, Hermann L., 3,833,385.

Carter, Crawford F.; and Dreher, John L., to Chevron Research Company. Extended service interval grease compositions. 3,833,500, Cl. 252-18.000.

Carter's Ink Company, The: *See—*
Peshin, John, 3,833,409.

Carver, Charles M. Floor tap insert drill. 3,833,073, Cl. 175-173.000.

Case, Cecil L.: *See—*
Burkhart, Merle K.; Fell, Ferol S.; and Case, Cecil L., 3,832,837.

Cassarly, James William; Graeff, Norwood Claude; Hooper, Dean Roosevelt; Pauza, William Vito; Sheesley, Wilmer Lee; and Youngfleish, Frank Christian, to AMP Incorporated. Electromechanical relay. 3,833,869, Cl. 335-106.000.

Castanis, George, to Kohner Bros. Inc. Pegged board puzzle. 3,833,222, Cl. 273-156.000.

Castellion, Alan W.: *See—*
Schwan, Thomas J.; Honkomp, LeRoy J.; Castellion, Alan W.; and Burns, Richard H., 3,833,586.

Caton, George, to Yorkshire Switchgear and Engineering Co. Limited. Draw out type electrical switchgear with improved movable contact assembly mounting means. 3,833,780, Cl. 200-50.0aa.

Catto, Kenneth A.; and Burt, Harold R., to Data Time, Inc. Telephone answering device. 3,833,186, Cl. 242-201.000.

Caule, Elmer J., to Olin Corporation. Method of producing tarnish resistant copper and copper alloys and products thereof. 3,833,433, Cl. 156-3.000.

Cavrich, George. Garment makers mannequin. 3,833,158, Cl. 223-68.000.

Cear, Stanley; and Feltzin, Joseph, to ICI America Inc. Semi-rigid polyurethane foams from a mixture of oxypropylated polyols. 3,833,526, Cl. 260-2.5ap.

Cecchin, Gildo; and Hilbert, Francis H., to Motorola, Inc. Signal processing circuit for a color television receiver. 3,833,823, Cl. 307-325.000.

Celanese Coatings & Specialties Company: *See—*
Carlos, Donald Dante; and Hicks, Darrell D., 3,833,550.

Cellu Products Company: *See—*
Currie, Grover C., 3,832,823.

Celotex Corp., The: *See—*
Sivin, Bernard J., 3,833,045.

Centro Sperimentale Metallurgico S.p.A.: *See—*
Ramacciotti, Aldo, 3,833,355.

Centronics Data Computer Corp.: *See—*
Howard, Robert, 3,833,105.

Centronics Data Computer Corporation: *See—*
Howard, Robert; and Robinson, Prentice L., 3,833,891.

Cerami, Anthony; and Manning, James M., to Research Corporation. Treatment of sickel cell anemia. 3,833,724, Cl. 424-129.000.

Cessna Aircraft Company, The: *See—*
Schmucker, Loftin Waldean, 3,832,852.

CGEE Alsthom: *See—*
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Chacko, Joseph Nmi; Davy, Ronald H.; and Satterfield, Robert S., to Sargent Industries, Inc. Slide-raft for emergency aircraft evacuation. 3,833,088, Cl. 182-48.000.

Chaffee, Robert C.: *See—*
Gilmore, Merwin W.; and Chaffee, Robert C., 3,833,118.

Chailer, John D. Wall outlet and switch box hole cutter. 3,833,311, Cl. 408-22.000.

Chakrabarti, Jiban Kumar; and Szinai, Stephen Slomo, to Lilly, Eli, and Company. 2-Amino-adamantane methylamine. 3,833,653, Cl. 260-563.00p.

Challis, Kenneth John: *See—*
Lee, Edward William; Tatchell, Keith Reid; Challis, Kenneth John; and Cockerton, Kenneth Archibald, 3,833,405.

Chaney, Emsley M.: *See—*
Chaney, Ray Owen; and Chaney, Emsley M., 3,833,078.

Chaney, Ray Owen; and Chaney, Emsley M. Short turn vehicle. 3,833,078, Cl. 180-42.000.

Chang, Jack Chu-Wang: *See—*
Gentile, Fred J., 3,833,885.

Chang, Marquerite S.: *See—*
Moy, Bertram K.; MacKenzie, Gerald L.; and Chang, Marquerite S., 3,833,432.

Chang, Yi-Chung, to Berry Metal Company. Apparatus for refining of steel. 3,833,209, Cl. 266-34.001.

Chaplin, Henry D., Jr.: *See—*
Pozella, William; and Chaplin, Henry D., Jr., 3,833,101.

Chapman, Emmett H. Gutiar-like instrument with magnetic pickup. 3,833,751, Cl. 84-1.160.

Charlson, Norman E., Jr.: *See—*
Koosman, Ronald L.; and Charlson, Norman E., Jr., 3,833,071.

Charman, Bernard William, to Aerpat A.G. Riveting apparatus. 3,832,880, Cl. 72-391.000.

Chassagne, Pierre J., to Bechtel International Corporation. Recovery of magnesium chloride hexahydrate from carnallite ore. 3,833,709, Cl. 423-157.000.

Chattaway, Keith; Gillings, Richard William; and Austin, Philip, to Imperial Chemical Industries, Limited. Measuring apparatus. 3,833,028, Cl. 139-122.000.

Check, Frank T., Jr.: *See—*
Lupkas, Raymond R.; Freeman, Gerald C.; and Check, Frank T., Jr., 3,832,946.

Chemetron Corporation: *See—*
Davis, William R., 3,833,245.

Chemical Construction Corporation: *See—*
Villiers-Fisher, John F., 3,833,711.

Chemische Fabrik Kalk GmbH: *See—*
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Chemische Werke Huls Aktiengesellschaft: *See—*
Karbstein, Bernhard; and Scheppers, Gerd, 3,833,521.

Chemprene, Inc.: *See—*
Gilliam, Howard E., Sr., 3,833,228.

Chen, Richard J.; and McCole, Thomas P., to Polaroid Corporation. Photographic products including rupturable containers. 3,833,381, Cl. 96-76.00c.

Chen, Winston H., to International Business Machines Corporation. Ink drop printer charge compensation. 3,833,910, Cl. 346-1.000.

Chetter, John, to United Kingdom Atomic Energy Authority. Nuclear reactor fuel element grid. 3,833,471, Cl. 176-78.000.

Chevron Research Company: *See—*
Carter, Crawford F.; and Dreher, John L., 3,833,500.
Egan, Clark J.; and White, Robert J., 3,833,499.
MaGee, Philip S., 3,833,623.
Reed, Marion G.; and Millhone, Ralph S., 3,833,718.

Chicago Metallic Corporation: *See—*
Jahn, Martin D., 3,832,816.

Chicklis, E. P.: *See—*
Naiman, Charles S.; Chicklis, E. P.; and Linz, Arthur, 3,833,805.

Chiklis, Charles K.; and Lubin, Paul D., to Polaroid Corporation. Color diffusion transfer films and processes with polymer encapsulated reflecting agents. 3,833,369, Cl. 96-3.000.

Childree, Herman T.; and Trawick, Stewart T., 50% to Sabine Manufacturing, Inc. Hot box for asphalt. 3,833,310, Cl. 404-75.000.

Chinoin Gyogyszer- Es Vegyeszeti Termekek Gyara Rt: *See—*
Feuer, Laszlo; Nogradi, Mihaly; Gottsegen, Agnes; Vermes, Borbala; Streliszky, Janos; Wolfner, Andras; Farkas, Lorant; Antus, Sandor; and Toth, Maria Kovacs, 3,833,730.

Chinoin Gyogyszer-Es Vegyeszeti Termekek Gyara Rt.: *See—*
Huhn, Magda; Toth, Geza; Resofszki, Gabor; Somfai, Eva; and Horvath, Gabor, 3,833,561.

Chodnekar, Madhukar Subraya; Pfiffner, Albert; Schwieter, Ulrich; Rigassi, Norbert; and Suchy, Milos, to Hoffmann-La Roche Inc. Alkenyloxy benzoic acid and esters thereof. 3,833,642, Cl. 260-473.00r.

Choha, DeForest D.: *See—*
Gray, Charles R.; and Choha, DeForest D., 3,833,371.

Cholet, Jacques, to Institut Francais du Petrole, des Carburants et Lubrifiants. Device for generating acoustic waves by implosion. 3,833,087, Cl. 181-120.000.

Chrismin Manufacturing Company, Inc.: *See—*
Hough, Curtis R., 3,833,156.

Christiansen, Allan Dale. Electronic component mounting wafers for repeated connection in a variety of circuit designs. 3,833,838, Cl. 317-101.0cc.

Christie, Christopher E.: *See—*

Appleby, Paul E.; Christie, Christopher E.; and Woodhall, Edwin S., 3,833,437.

Christl, Manfred: *See—*
Butter, Karl; Tuscher, Otto; and Christl, Manfred, 3,832,847.

Chupka, Francis L., Jr.: *See—*
Russell, Philip W.; Simons, Charles W.; and Chupka, Francis L., Jr., 3,833,442.

Ciba-Geigy AG: *See—*
Toepfl, Werner, 3,833,600.

Ciba-Geigy Corporation: *See—*
Baumann, Marcus; and Bosshard, Hans, 3,833,619.
Dazzi, Joachim, 3,833,590.
Habermeier, Jurgen; and Porret, Daniel, 3,833,548.
Holt, Brian; Randell, Donald Richard; and Jack, James, 3,833,636.
Rathgeb, Paul, 3,833,691.

Cities Service Company: *See—*
Newcombe, Jack; and Dotson, Anderson O., Jr., 3,833,675.

Citizen Watch Company Limited: *See—*
Matsumura, Tetso; Tsuzuki, Akira; Tanaka, Kazuo; and Suzuki, Choken, 3,832,844.

Clarion Co., Ltd.: *See—*
Yasuda, Yukitomo, 3,832,907.

Clark, David William Harold, to May & Baker Limited. Zinc sulphide pigments. 3,833,394, Cl. 106-293.000.

Clark, John Colin; and Elks, Joseph, to Glaxo Laboratories Limited. Preparation of cephalosporins having a substituted methyl group at position-3 by reaction of a 3-halomethyl cephalosporin with an onium salt. 3,833,572, Cl. 260-243.00c.

Clark, William E. Pre-gapped breaker point assemblies. 3,833,777, Cl. 200-31.000.

Class, Jean, to Les Ateliers de Construction Mecaniques C. & A. Bag-manufacturing machine. 3,833,446, Cl. 156-499.000.

Cleveland Twist Drill Company, The: *See—*
Behrens, Alvin J., 3,833,232.

Clipp, Wendell V. Blood detecting device. 3,832,993, Cl. 128-2.00r.

Coach and Car Equipment Corporation: *See—*
Harder, Arthur J., Jr., 3,833,260.

Coats, John H.; Meyer, Curtis E.; and Reusser, Fritz, to Upjohn Company, The. Alamethicin and production therefor. 3,833,723, Cl. 424-118.000.

Cobb, Raymond L., to Phillips Petroleum Company. Preparation of unsaturated nitriles. 3,833,637, Cl. 260-465.00k.

Cockerton, Kenneth Archibald: *See—*
Lee, Edward William; Tatchell, Keith Reid; Challis, Kenneth John; and Cockerton, Kenneth Archibald, 3,833,405.

Coenen, Willem Frans. Seat belt. 3,833,239, Cl. 280-150.0sb.

Cohly, Mauj A., to Tee-Pak, Inc. Process for tanning edible collagen casing. 3,833,746, Cl. 426-277.000.

Coin Security Corp., The: *See—*
Blum, Robert, 3,833,104.

Cole, Bernard M., to Stribbons Ltd. Ornamental expansible strip. 3,832,841, Cl. 57-152.000.

Cole, Charles P.: *See—*
Reilly, Frank N.; Wilson, Jesse C.; and Cole, Charles P., 3,833,812.

Colgate-Palmolive Company: *See—*
Rockefeller, Winston G., 3,832,964.

Collins Radio Company: *See—*
Lundgreen, Michael W., 3,833,855.

Collinson, John Dunn, to Rank Organisation Limited. Electro-acoustic transducers. 3,833,771, Cl. 179-115.5pv.

Columbia Broadcasting System, Inc.: *See—*
Vennola, Jorma, 3,832,799.

Combs, Stewart Cecil: *See—*
Maertin, Klaus Paul; and Combs, Stewart Cecil, 3,832,754.
Maertin, Klaus Paul; and Combs, Stewart Cecil, 3,832,755.

Combustion Engineering Inc.: *See—*
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Commander Industries, Inc.: *See—*
Stout, Bud D., 3,832,922.

Commercial Electronics, Inc.: *See—*
Porter, William A.; Burough, Irvin G.; and Kline, Donald D., 3,833,305.

Compaan, Klaas; and Bouwhuis, Gijsbertus, to U.S. Philips Corporation. Apparatus for positional control of a reading head in a device for reproducing optically coded video disk recordings. 3,833,769, Cl. 179-100.30v.

Compagnie Electro-Mecanique: *See—*
Bidard, Rene, 3,833,480.

Compagnie Generale d'Automatisme: *See—*
Boucris, Hubert, 3,833,452.

Computer Television Inc.: *See—*
Kirk, Donald, Jr.; and Paolini, Michael J., 3,833,757.

Conat Industries Limited, mesne: *See—*
Cardinal, Philip, 3,833,052.

Congoleum Industries, Inc.: *See—*
Winters, Donald C., 3,833,459.

Connell, Eugene W.: *See—*
Elkins, William; Connell, Eugene W.; and Alesna, Robert E., 3,832,735.

Connick, William J., Jr.: *See—*
Ellzey, Samuel E., Jr.; and Connick, William J., Jr., 3,833,661.

Consiglio Nazionale delle Richerche: *See—*
Bonori, Maurizio; Franconi, Cafiero; and Galuppi, Paolo, 3,833,931.

Constructions Mecaniques de Normandie: *See—*
Amiot, Felix, 3,833,314.

Constructions Navales et Industrielles de la-Mediterranee C.N.I.M.: *See—*
Even, George, 3,832,932.

Continental Can Company, Inc.: *See—*
Adomaithis, Domas, 3,833,700.
Pacilio, Joseph C., 3,833,339.
Szatkowski, Richard R., 3,833,692.

Continental Gummi-Werke Aktiengesellschaft: *See—*
Klopper, Friedrich; and Bullmann, Rolf, 3,833,324.

Continental Linoleum Uion Bertiebs AG: *See—*
Joos, Pierre Emmanuel, 3,833,703.

Continuous Curve Contact Lenses, Inc.: *See—*
Brucker, Donald, 3,833,786.

Control Data Corporation: *See—*
Cray, Seymour R., 3,833,889.

Cook, Donald F. Floating chemical feeding and chemical process plant for water purification. 3,833,122, Cl. 210-207.000.

Cooke, Anson R.; and Gallagher, Nancy E., to Amchem Products, Inc. Method of inducing carontenoid accumulation in plant tissue. 3,833,350, Cl. 71-98.000.

Cooper, Bryan Ewart: *See—*
Owen, William John; and Cooper, Bryan Ewart, 3,833,633.

Cooperheat: *See—*
Badrock, John, 3,833,338.

Copeland, Henry W. Portable pulpwood slashing machine. 3,832,928, Cl. 83-467.000.

Cording, James Jr.; and Eskew, Roderick K. Process for reducing the hygroscopicity of dehydrated fruits. 3,833,747, Cl. 426-289.000.

Corning Glass Works: *See—*
Adelsberg, Lee M.; Carson, Michael C.; Forker, Ray B., Jr.; and Rittler, Hermann L., 3,833,385.
Noll, Burton A., 3,833,230.

Cottleib, David: *See—*
Shier, Wayne Thomas; Rinehart, Kenneth L. Jr.; and Cottleib, David, 3,833,556.

Couch, Richard W., Jr., to Hypotherm, Incorporated. Plasma jet cutting torch having reduced noise generating characteristics. 3,833,787, Cl. 219-121.00p.

Courteix, Jean: *See—*
Bizot, Jean; Courteix, Jean; and Philipot, Jean-Pierre, 3,833,490.

Courtois, Lucien, to Institut Francais du Petrole, des Carburants et Lubrifiants. Remotely actuated device for surveying underground strata. 3,833,074, Cl. 175-87.000.

Cox, Edgar Russell, to Texas Industries, Inc. Dust collector. 3,832,833, Cl. 55-378.000.

Crabbe, Pierre; and Fried, John H., to Syntex Corporation. B,D-seco-delta 4 and delta 5 (10)-steroidal compounds. 3,833,644, Cl. 260-488.00r.

Craggs, Donald E.; Gillen, Richard S.; and Lipman, Stephen C., to Union Oil Company of California. Well completion and pumping system. 3,833,060, Cl. 166-68.000.

Craig, Robert J. G., to Teledyne Industries, Inc. Gimbal structure for dymanically tuned free rotor gyro. 3,832,906, Cl. 74-5.00f.

Crail, Ian Robert Henry: *See—*
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Crawford, Irvin H.; and Hartman, Francis M., to Eastman Kodak Company. Novel photographic elements. 3,833,380, Cl. 96-74.000.

Cray, Seymour R., to Control Data Corporation. Multi-mode data processing system. 3,833,889, Cl. 340-172.500.

Creskoff, Jacob J., to Aerovac Corporation. Longitudinally stiffened flexible lifter for arcuate objects. 3,833,251, Cl. 294-64.00r.

Crider, Albert A.: *See—*
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Crilly, Robert R. Sterile drainage assemblies. 3,832,999, Cl. 128-275.000.

Crooks, Stanley R., to Whirlpool Corporation. Vacuum cleaner structure. 3,832,753, Cl. 15-371.000.

Croom, Hardy C., to Owens-Illinois, Inc. Method of decolorizing waste process liquid discharged by a paper mill. 3,833,463, Cl. 162-29.000.

Crosby, Philip C.; and Goyette, Robert J., to Meditech Energy and Environmental Corporation. Quick-responding thermometer. 3,833,145, Cl. 220-64.000.

Cross, Willaim D.: *See—*
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Crotty, James M.; Geary, Daniel C.; Levy, Edward F.; Lopiekes, Dolores V.; Raymond, Robert L.; and Siegal, Bernard, to Gillete Company, The. Astringent compositions. 3,833,720, Cl. 424-47.000.

Crounse, Nathan N.; and Desai, Kantilal B., to Sterling Drug Inc. Optically brightened compositions with unsymmetrical carboxystyrylphenyl-containing compounds. 3,833,510, Cl. 252-301.20w.

Crowe, Norman P.: *See—*
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Crowther, John Cooper; and Ashpole, Roger Frederick. Electroplating chromium and chromium alloys. 3,833,485, Cl. 204-43.00r.

Crystal, Milton A., to American Polymers, Inc. Pre-die chamber for extrusion apparatus. 3,833,202, Cl. 259-4.000.

Csonka, Lajos: *See—*
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Cuccio, Allen B. J.: *See—*
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Cunningham, James A.; and Fuller, Clyde R., to Texas Instruments, Incorporated. Modified tungsten metallization for semiconductor devices. 3,833,842, Cl. 317-234.00r.
Currie, Grover C., to Cellu Products Company. Tray and pad interleaving apparatus. 3,832,823, Cl. 53-35.000.
Curry, John Downing, to Procter & Gamble Company, The. Phenylantimony bis(2-pyridinethiol l-oxide). 3,833,565, Cl. 260-270.000.
Dabrowski, Alfred J., Jr.: *See—*
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Dach, Hansjorg; Bordowsky, Karl Heinz; and Bucksch, Manfred, to ZF Getriebe Gesellschaft mit beschrankter Haftung. Resilient stop for piston or the like. 3,832,934, Cl. 92-130.000.
Dagostine, Leslie James, to Somerville Industries Limited. Decorative container. 3,833,164, Cl. 229-37.00r.
Daikin Kogyo Co., Ltd.: *See—*
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D'Alonzo, Richard Titus: *See—*
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Petersen, Tom Kastrup, 3,833,848.
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Davis, William R., to Chemetron Corporation. Cylindrical bellows. 3,833,245, Cl. 285-226.000.
Davy, Ronald H.: *See—*
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Dean, Charles W. Means and method for storing aircraft. 3,833,138, Cl. 214-334.000.
Dean, Jesse W. Racket with adjustable handle. 3,833,219, Cl. 273-75.000.
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Debaigt, Jean, to CGEE Alsthom. Terminal box containing a printed circuit card. 3,833,839, Cl. 317-118.000.
Debat, Jacques, to Institut de Recherches Chimiques et Biologiques Appliquees, I.R.C.E.B.A. Halogenated dibenzylphenols and their preparation. 3,833,672, Cl. 260-619.00a.
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Denslow, Clark A.; and Obeda, Edward G., to Branson Instruments, Incorporated. Ultrasonic apparatus. 3,833,163, Cl. 228-1.000.
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Denzel, Theodor; and Hoehn, Hans, to Squibb, E. R. & Sons, Inc. Amino derivatives of pyrazolopyridine-5-carboxylic acids and esters. 3,833,598, Cl. 260-295.00f.
Derich, Josef; Kamp, Heinz; and Frehn, Gunter, to Schlafhorst, W., & Co. Warp knitting machine. 3,832,868, Cl. 66-84.000.
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Deschamps, Andre; Dezael, Claude; and Renault, Philippe, to Institut Francais du Petrole des Carburants et Lubrifiants. Process for manufacturing sulfur or sulfurous anhydride from ammonium sulfates. 3,833,715, Cl. 423-573.000.
Deserno, Ulrich; and Haussuehl, Siegfried, to Siemens Aktiengesellschaft. Non-linear optical component. 3,833,286, Cl. 350-160.00r.
Desty, Denis Henry; and Young, Christopher John, to British Petroleum Company Limited, The. Flarestacks. 3,833,337, Cl. 431-284.000.
D'Eugenio, Benito. Process for producing clothes-pins by extrusion of plastic material and the clothes pins obtained. 3,832,757, Cl. 24-137.00a.
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Dickie, Ray A.; and Newman, Seymour, to Ford Motor Company. Rubber-modified thermosets and process I. 3,833,683, Cl. 260-836.000.
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Dlugos, Hans Georg; and Zerrmayr, Friedrich, to Kraftwerke Union Aktiengesellschaft. Device for indicating or controlling load changes in steam or gas turbines. 3,832,893, Cl. 73-116.000.
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Doherty, Robert P. Induced air cooling and heating system. 3,833,057, Cl. 165-123.000.
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Efanov, Valery Pavlovich; Komyak, Nikolai Ivanovich; Ljuttsau, Vsevolod Grigorievich; and Rabodzei, Nikolai Vasilievich. Method of X-ray diffraction topography of monocrystals and apparatus for effecting same. 3,833,810, Cl. 250-273.000.
Egan, Clark J.; and White, Robert J., to Chevron Research Company. Hydrocoversion process. 3,833,499, Cl. 208-111.000.
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Elban, Wayne L.; and Larsen, James V., to United States of America, Navy. Graphite fiber treatment. 3,833,402, Cl. 117-46.0ca.
Elders, Gerald W. Self-sharpening bit and mounting therefor. 3,833,264, Cl. 299-86.000.
Elders, Gerald W. Rotatable sleeve for self-sharpening bit. 3,833,265, Cl. 299-86.000.
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Encinias, Petro Antonio. Fishing pole holder. 3,832,794, Cl. 43-15.000.

Enders, Edgar; Grewe, Ferdinand; and Frohberger, Paul-Ernst, to Bayer Aktiengesellschaft. Dialkylaminophenylhydrazones. 3,833,607, Cl. 260-326.5fl.

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Eriksoo, Edgar; Fex, Hans Jacob; Hogberg, Knut Bertil; Mollberg, Henri Rene; Rohtc, Oskar Adolf; and Otto, Paul Hans; deceased (by Kneip, Ruth), to Atkiebolaget Lee Halsingborg. Phenothiazines. 3,833,567, Cl. 260-243.00a.

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Eukushima, Osamu; Sato, Masamichi; and Matsumoto, Sciji, said Fukushima and said Matsumoto assors. by mesne assigts. to Rank Xerox, Ltd. Electro-photographic apparatus. 3,832,975, Cl. 118-637.000.

Evans, David H.; and Greenwald, Richard B., to Polaroid Corporation. Synthesis of 2-methoxytropones. 3,833,657, Cl. 260-586.00m.

Evans, Roy; and Saltonstall, Peter, to Hardaker, John T., Limited. Gripper type looms. 3,833,024, Cl. 139-2.000.

Even, George; deceased (by de la Querantonnais, Maitre Jacques Mahot; Legal representative), to Constructions Navales et Industrielles de la-Mediterranee C.N.I.M. Trailor carriage with collapsible wheels. 3,832,932, Cl. 89-40.00j.

Ever-Roll Manufacturing Corp., The: *See*—
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Fath, Joseph, to Tenneco Chemicals, Inc. Corrosion inhibiting gel for electrical connectors. 3,833,513, Cl. 252-389.00r.

Fechheimer, Paul R. Filling machine for containers. 3,833,031, Cl. 141-84.000.

Fecteau, Dennis E. Intrusion alarm with indication of prior activation. 3,833,895, Cl. 340-224.000.

Fein, Michael E.; and Schermerhorn, Jerry D., to Owens-Illinois, Inc. Electronic conditioning of gas discharge panels by inversion interval extension. 3,833,832, Cl. 315-169.00r.

Feith, Franz. Device for loosening wheel nuts or lugs of automobile wheels. 3,832,917, Cl. 81-53.00r.

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Hitachi, Ltd.: *See—*
Kikuchi, Akira; and Agatsuma, Takashi, 3,833,434.
Kumada, Akio, 3,833,281.

Hitt, Lloyd A. Row marker. 3,833,066, Cl. 172-131.000.

Hiwano, Kunio; Fukagawa, Masaki; Honjo, Satoru; Iwasa, Masakazu; and Matsumoto, Seiji, to Fuji Photo Film Co., Ltd. and Mitsubishi Jukogyo Kabushiki Kaisha. Electrostatic power coating method combined with an electrophotographic process. 3,833,365, Cl. 96-.0sd.

Hnot, Walter R., to Esso Research and Engineering Company. Tandem mooring-loading system. 3,833,032, Cl. 141-232.000.

Hoare, John J., to Kirsch Company. Drapery pin inserter. 3,833,038, Cl. 145-46.000.

Hobbs, Ronald Henry, to Cam Gears Limited. Ball joint. 3,833,309, Cl. 403-122.000.

Hock, Fromund, to Lietz, Ernst, G.m.b.H. Method and apparatus for the automatic photoelectric trapping of local changes of optically effective object structures. 3,833,302, Cl. 356-114.000.

Hoehn, Hans: *See—*
Denzel, Theodor; and Hoehn, Hans, 3,833,598.

Hoehn, Hans; and Denzel, Theodor, to Squibb, E. R. & Sons, Inc. Amino derivatives of pyrazolopyridine carboxylic acids and esters. 3,833,594, Cl. 260-293.600.

Hofer, Kurt: *See—*
Avar, Lajos; and Hofer, Kurt, 3,833,658.

Hoffman-La Roche Inc.: *See—*
Grethe, Guenter; and Uskokovic, Milan Radoje, 3,833,593.

Hoffmann-La Roche Inc.: *See—*
Chodnekar, Madhukar Subraya; Pfiffner, Albert; Schwieter, Ulrich; Rigassi, Norbert; and Suchy, Milos, 3,833,642.
Edenhofer, Albrecht; and Spiegelberg, Hans, 3,833,576.
Edenhofer, Albrecht; and Spiegelberg, Hans, 3,833,655.

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Laurent, Henry; Wiechert, Rudolf; Prezewowsky, Klaus; Hofmeister, Helmut; Gerhards, Erich; Mengel, Klaus; and Kolb, Karl Heinz, 3,833,563.

Hogberg, Knut Bertil: *See—*
Eriksoo, Edgar; Fex, Hans Jacob; Hogberg, Knut Bertil; Mollberg, Henri Rene; Rohte, Oskar Adolf; and Otto, Paul Hans, 3,833,567.

Hohwart, George; and Toth, Paul, to Woodworth, N. A., Company. Pin arbor. 3,833,229, Cl. 279-1.00j.

Hoiles, Stephen North, to American Can Company. End wall construction for a carton. 3,833,165, Cl. 229-37.00r.

Holden, William John. Bending machines. 3,832,879, Cl. 72-383.000.

Holdrege, Charles Truman, to Bristol-Myers Company. 7-(3-Substituted-1,2,4-oxadiazole-5-one-4-acetamido) cephalosporanic acids and derivatives thereof. 3,833,570, Cl. 260-243.00c.

Holliday, Charles Harry; Macewan, William Ritchie; Mullin, John Brian; and Webb, Alan Edward Valender, to National Research Development Corporation. Apparatus for the preparation and growth of crystalline material. 3,833,342, Cl. 23-273.0sp.

Holoka, Alexander. Fuse receptacle. 3,833,875, Cl. 337-269.000.

Holosonics, Inc.: *See—*
Langlois, Gary N., 3,832,888.

Holowaty, Michael O.; and Stirling, Harold T., to Carbo-Scrap, Inc., mesne. Process for production of carbon-bearing scrap and product. 3,833,343, Cl. 29-180.00r.

Holst, Jan-Olov. Anti-locking arrangement for fluid pressure actuated brake. 3,833,097, Cl. 188-181.00a.

Holt, Brian; Randell, Donald Richard; and Jack, James, to Ciba-Geigy Corporation. Polymers stabilized with acyl hydrazones. 3,833,636, Cl. 260-45.80n.

Holtschmidt, Hans: *See—*
Beck, Gunther; and Holtschmidt, Hans, 3,833,601.

Holub, Fred F.; and Gaertner, Richard F., to General Electric Company. Aqueous electrocoating solutions from polyamide-acid resin. 3,833,533, Cl. 260-29.20m.

Holub, Fred F.; Pauze, Denis R.; and Bialous, Charles A., to General Electric Company. Polyimidosiloxane ester carbonate copolymers. 3,833,681, Cl. 260-824.00r.

Holzkamp, Erhard: *See—*
Ziegler, Karl; Martin, Heinz; Breil, Heinz; and Holzkamp, Erhard, 3,833,551.

Holzman, James W., to Delbar Products, Inc. Vehicle mirror bracket assembly. 3,833,198, Cl. 248-476.000.

Honas, Norbert W., 20% to Lee, Raymond, Organization, Inc., The. Bread dispenser. 3,833,148, Cl. 221-250.000.

Honda Giken Kogyo Kabushiki Kaisha: *See—*
Taguchi, Eiji, 3,832,984.

Honda, Haruo: *See—*
Suzuki, Takeo; Tomita, Fusao; Honda, Haruo; Shirahata, Kunikatsu; Deguchi, Takashi; and Kato, Fumio, 3,833,476.

Honeywell Inc.: *See—*
Bassett, William W., 3,833,876.
Haan, David E., 3,833,825.
Schebalin, Sergei, 3,833,407.

Honeywell Information Systems Inc.: *See—*
Milford, Richard E., 3,833,853.
Stafford, John P.; Cuccio, Allen B. J.; and Johnson, J. Arthur, 3,833,888.

Honjo, Satoru: *See—*
Hiwano, Kunio; Fukagawa, Masaki; Honjo, Satoru; Iwasa, Masakazu; and Matsumoto, Seiji, 3,833,365.

Honkomp, LeRoy J.: *See—*
Schwan, Thomas J.; Honkomp, LeRoy J.; Castellion, Alan W.; and Burns, Richard H., 3,833,586.

Hoon, Harry E., Jr., to Envirotech Corproation. Method and apparatus for cleaning the filter elements of a dust collector. 3,832,832, Cl. 55-302.000.

Hooper, Dean Roosevelt: *See—*
Cassarly, James William; Graeff, Norwood Claude; Hooper, Dean Roosevelt; Pauza, William Vito; Sheesley, Wilmer Lee; and Youngfleish, Frank Christian, 3,833,869.

Hoover Company, The: *See—*
Todd-Reeve, Leslie, 3,832,870.

Horvath, Gabor: *See—*
Huhn, Magda; Toth, Geza; Resofszki, Gabor; Somfai, Eva; and Horvath, Gabor, 3,833,561.

Hosack, Donald R.: *See—*
Burns, Richard H.; Hosack, Donald R.; and Welker, Helmut, 3,833,303.

Hotta, Yasue: *See—*
Abe, Jinnosuke; Watanabe, Tetsuo; Take, Teruo; Fujimoto, Kentaro; Fujii, Tadashiro; Hotta, Yasue; Kobari, Sadami; Ishimura, Fumihiro; Kitahora, Nobuya; and Fukushima, Mituru, 3,833,558.

Houck, Deward J., to International Scanatron Systems Corp. Fluorescent lamp system for facsimile. 3,833,761, Cl. 178-7.100.

Houdin, Henri Rene. Method of constructing building and apparatus for carrying out said method. 3,832,819, Cl. 52-741.000.

Hough, Curtis R., to Chrismin Manufacturing Company, Inc. Drum-top pump assembly. 3,833,156, Cl. 222-383.000.

Houry, Shlomo: *See—*
Mechoulam, Raphael; Houry, Shlomo; and Loev, Bernard, 3,833,611.

Hovance, Hubert Thomas; and Tobin, Michael Joseph, to Miller Electric Mfg. Co. Weld head position control system. 3,833,788, Cl. 219-124.000.

Howard, Robert, to Centronics Data Computer Corp. Printer head assembly. 3,833,105, Cl. 197-1.00r.

Howard, Robert; and Robinson, Prentice I., to Centronics Data Computer Corporation. High speed matrix printer. 3,833,891, Cl. 340-172.500.

Howe, William J., to Georgia-Pacific Corporation. Package of containerized goods. 3,833,116, Cl. 206-431.000.

Hoya Glass Works, Ltd.: *See—*
Yamashita, Toshiharu; and Izumitani, Tetsuro, 3,833,511.

Huber, Josef; and Schaffer, Bernhard, to Siemens Aktiengesellschaft. Data processing systems having multiplexed system units. 3,833,798, Cl. 235-153.0ae.

Hughes Aircraft Company: *See—*

Gebhardt, Richard A.; Priester, Willis M.; Muchlinski, Donald A.; King, Donald L.; Parke, Donald P.; Goldberg, Gerald M.; Scheidler, Stuart P.; and Sidlo, Richard, 3,833,904.

Hughes, Charles R., to Bethlehem Steel Corporation. Molding polyurethane foam in a mold having a cyclically flexing cover. 3,833,694, Cl. 264-51.000.

Hughes, John Thomas: *See—*
McWilliams, Joseph Anthony; and Hughes, John Thomas, 3,833,793.

Hughes Tool Company: *See—*
Robinson, Franklin Davis, 3,833,188.

Hugo, Michel: *See—*
Bellot, Jean; and Hugo, Michel, 3,833,358.

Huhn, Magda; Toth, Geza; Resofszki, Gabor; Somfai, Eva; and Horvath, Gabor, to Chinoin Gyogyszer-Es Vegyeszeti Termekek Gyara Rt. Method for the preparation of carboxyl group containing 6-amino-penicillanic acid derivatives. 3,833,561, Cl. 260-239.100.

Hull, Roger C.: *See—*
Bigbie, Samuel E.; and Hull, Roger C., 3,833,884.

Hulsmann, Hans Leo; and Renckhoff, Gustav, to Dynamit Nobel Aktiengesellschaft. Process for the production of pure aryl esters of dicarboxylic acids. 3,833,643, Cl. 260-475.0pn.

Humber, Leslie G.: *See—*
Demerson, Christopher A.; Humber, Leslie G.; Santroch, George; Dobson, Thomas A.; and Jirkovsky, Ivo, 3,833,575.

Hunt & Moscrop Limited: *See—*
Johnson, Jack, 3,832,758.

Hunt, Brian John: *See—*
Stokes, Roger Francis; and Hunt, Brian John, 3,833,348.

Huntingdon Industries Incorporated: *See—*
Ullman, John E., 3,832,826.

Hurn Brothers Engineering Limited: *See—*
Hurn, James, 3,833,033.

Hurn, James, to Hurn Brothers Engineering Limited. Method and apparatus for working elongate components at successive longitudinal locations. 3,833,033, Cl. 144-3.00r.

Hurni, Hans, to Canron, Inc. Device for the vertical and lateral displacement of railway track. 3,832,952, Cl. 104-7.00b.

Hurst, Gerald L., to Kinetics International Corporation. Inverted bottle arming technique. 3,832,950, Cl. 102-24.00r.

Hutchison, John J.: *See—*
Gehm, Robert; and Hutchison, John J., 3,833,669.

Hutt GmbH: *See—*
Pitzer, Hans-Joachim; and Pietsch, Wolfgang B., 3,833,327.

Huys, Theodore H. J.; and Donkers, Peter J. M. Apparatus and method for cultivating plants. 3,832,802, Cl. 47-1.100.

Hy-Way Heat Systems, Inc.: *See—*
Scheetz, William F., 3,833,014.

Hydro-Stack Mfg. Corp.: *See—*
Kiernan, Henry E., 3,832,851.

Hypotherm, Incorporated: *See—*
Couch, Richard W., Jr., 3,833,787.

Iannazzi, Fred D.; Rafferty, John W.; Sparrow, Donald B.; and Strauss, Richard, to Little, Arthur D., Inc. Dry method for separating paper constitutents for recovery and recycling. 3,833,460, Cl. 162-5.000.

ICI America Inc.: *See—*
Cear, Stanley; and Feltzin, Joseph, 3,833,526.

Iijima, Yoo: *See—*
Hayashi, Katsumi; Iijima, Yoo; and Kobayashi, Teruo, 3,833,378.

IIT Research Institute: *See—*
Camras, Marvin, 3,833,920.
Camras, Marvin; and Galus, Stanley A., 3,833,923.

Ikegami Tsushinki Co., Ltd.: *See—*
Kumagai, Mituru; Sasaoka, Takeshi; and Nakayama, Yoshiaki, 3,833,756.

Ilford Limited: *See—*
Lee, Edward William; Tatchell, Keith Reid; Challis, Kenneth John; and Cockerton, Kenneth Archibald, 3,833,405.

Imai, Shyozaburo: *See—*
Usamoto, Teruyoshi; Okita, Taisuke; Yoshida, Nobuyuki; Hirooka, Masaaki; Taniguchi, Isoji; and Imai, Shyozaburo, 3,833,689.

Immel, Otto; and Schwarz, Hans-Helmut, to Bayer Aktiengesellschaft, mesne. Process for rearrangement of ketoximes by using abrasion resistant partially nitrided boric acid catalysts. 3,833,560, Cl. 260-239.30a.

Imperial Chemical Industries, Limited: *See—*
Chattaway, Keith; Gillings, Richard William; and Austin, Philip, 3,833,028.
Frank, Charles Roger, 3,833,051.
McAvoy, James, 3,833,663.

Inaba, Shigeho: *See—*
Moriyama, Hiroaki; Yamamoto, Hisao; Inaba, Shigeho; Nagata, Hideo; and Tamaki, Toshio, 3,833,648.

Inbar, Dan: *See—*
Shoshani, Avraham; Laor, Dan; Benzeev, Dan; Inbar, Dan; and Sabbah, Benjamin Prosper, 3,833,795.

Ingels, George W. Laboratory refrigeration apparatus. 3,832,862, Cl. 62-227.000.

Ingram, Alvin R., to Arco Polymers, Inc. Degradable polyethylene film. 3,833,401, Cl. 117-38.000.

Inoue, Hiroshi: *See—*
Komeya, Katsutoshi; Tsuge, Akihiko; Inoue, Hiroshi; and Murata, Hiroyuki, 3,833,389.

Inoue, Michiro; Ishikawa, Masayuki; Tsuchiya, Takashi; and Shimamoto, Takio. 4-Carbamoyl phthalazones. 3,833,579, Cl. 260-250.00p.

Institut de Recherches Chimiques et Biologiques Appliquees, I.R.C.E.B.A.: *See—*
Debat, Jacques, 3,833,672.

Institut Francais du Petrole, des Carburants et Lubrifiants: *See—*
Cholet, Jacques, 3,833,087.
Courtois, Lucien, 3,833,074.
Deschamps, Andre; Dezael, Claude; and Renault, Philippe, 3,833,715.

Institutal De Cercetare Si Proiectare Tehnolocica Pentru Industria Extractiva De Petrol Si Gaze: *See—*
Nicolau, Ioan Victor, 3,832,899.

Institute Francais du Petrole des Carburants et Lubfiants: *See—*
Deschamps, Andre; Dezael, Claude; and Renault, Philippe, 3,833,710.

Institute Francais du Petrole, des Carburants et Lubrifiants: *See—*
Renault, Philippe; Deschamps, Andre; and Dezael, Claude, 3,833,714.

Institutul de Cercetare Si Proiectare Pentru Industria Electrotehhica: *See—*
Grosu, Stefan I., 3,833,849.

Intellectual Property Development Corporation: *See—*
Saltzman, William H., 3,833,620.

Intercooperation Kereskedelemfejlesztesi Rt.: *See—*
Balint, Gabriella, nee Berczi; Csonka, Lajos; Galambos, Gyorgy; Gomory, Pal; Kelen, Tibor; Nagy, Ferenc; Szerencz, Janos; and Tudos, Ferenc, 3,833,631.

International Business Machines Corporation: *See—*
Aviram, Arieh; and Seiden, Philip E., 3,833,894.
Bahl, Lalit R.; Barnea, Daniel I.; and Kobayashi, Hisashi, 3,833,900.
Bell, Arthur H., 3,833,280.
Bigbie, Samuel E.; and Hull, Roger C., 3,833,884.
Chen, Winston H., 3,833,910.
Wallace, Leonard J., 3,833,870.
Watkins, Norman, 3,833,181.

International Computers Limited: *See—*
Walker, Peter Albert; and Scarrott, Gordon George, 3,832,806.

International Scanatron Systems Corp.: *See—*
Houck, Deward J., 3,833,761.

International Standard Electric Corporation: *See—*
Boutelant, Paul, 3,833,866.
Ramsay, Melvin Murray; and McLennan, Anthony Ian, 3,833,763.
Tournier, Christian Yves; and Buzy-Debat, Jean Marie C. S., 3,833,890.

International Synthetic Rubber Company Limited, The: *See—*
Bennett, Donald Alfred; and Duck, Edward William, 3,833,532.

International Telephone and Telegraph Corporation: *See—*
Austin, Robert R.; and Vincent, Arthur Leonard, 3,833,508.
Carlson, Elmer A., 3,833,859.
Pulkkinen, Erkki J.; Reintjes, Marten; and Starr, Laurence Dean, 3,833,527.

International Telephone and Telegraph Corproation: *See—*
Schlatter, Gerald Lance, 3,832,884.

International Telephone and Telephone Corporation: *See—*
Tyau, Walter Fah Min, 3,832,883.

International Tepetronics Corporation: *See—*
Jenkins, John P., 3,833,925.

Iorio, Amedeo, to SYN Cordion Musical Instruments Corp. Reed accordion with programmable electronic organ sound. 3,833,750, Cl. 84-1.010.

Iozzio, Phyllis, 20% to Lee, Raymond, Organization, Inc., The. Hand lotion dispensing device. 3,833,149, Cl. 222-70.000.

Isdith, Francisco J., to Lee, Raymond, Organization, Inc., The. Rolling balancer. 3,833,215, Cl. 272-60.00r.

Ishikawa, Masayuki: *See—*
Inoue, Michiro; Ishikawa, Masayuki; Tsuchiya, Takashi; and Shimamoto, Takio, 3,833,579.

Ishimura, Fumihiro: *See—*
Abe, Jinnosuke; Watanabe, Tetsuo; Take, Teruo; Fujimoto, Kentaro; Fujii, Tadashiro; Hotta, Yasue; Kobari, Sadami; Ishimura, Fumihiro; Kitahora, Nobuya; and Fukushima, Mituru, 3,833,558.

Isotopes, Incorporated: *See—*
Snyder, Donald L.; Himes, John H.; and Pravda, Milton F., 3,833,428.

Ito, Ken: *See—*
Kaneko, Tutomu; Turumi, Takashi; Emori, Shuichi; and Ito, Ken, 3,833,438.

Itoh, Shinobu. Electric power supplying and receiving device. 3,833,820, Cl. 307-146.000.

Ivan, Geza: *See—*
Giflo, Henrik; Enekes, Sandor; Zambo, Pal; Sziklavari, Janos; Farkas, Istvan; Ivan, Geza; Molnar, Jozsef; Vamosi, Jozsef; and Valko, Janos, 3,833,360.

Iwasa, Masakazu: *See—*
Hiwano, Kunio; Fukagawa, Masaki; Honjo, Satoru; Iwasa, Masakazu; and Matsumoto, Seiji, 3,833,365.

Iwata, Michiaki: *See—*
Mase, Sadaaki; Seiki, Shigeo; Kai, Fumio; Watanabe, Tetsuro; and Iwata, Michiaki, 3,833,735.

Iwatsuki, Makoto: *See—*

Akamatsu, Akira; Togo, Kazushi; and Iwatsuki, Makoto, 3,833,684.

Izumi Denki Company Limited: *See—*
Fujita, Teizo; and Kikuchi, Masao, 3,833,877.

Izumitani, Tetsuro: *See—*
Yamashita, Toshiharu; and Izumitani, Tetsuro, 3,833,511.

Jablonsky, Erich, to Zahnradfabrik Friedrichshafen AG. Auxiliary power steering device for vehicles with pressure accumulators. 3,832,933, Cl. 91-374.000.

Jack, James: *See—*
Holt, Brian; Randell, Donald Richard; and Jack, James, 3,833,636.

Jackson, Michael Vivian, to Farmhand (U.K.) Ltd. Tipper vehicles. 3,833,263, Cl. 298-5.000.

Jacobi, John A.; and Sedlar, Anthony E., to Wickes Corporation, The. Orbital crankshaft lathe mechanism and methods of machining. 3,832,919, Cl. 82-1.00c.

Jacobs, Joh., & Co.: *See—*
Schmidt, Ernst, 3,833,740.

Jacobs, Peggy S. Artificial eyelashes. 3,833,007, Cl. 132-53.000.

Jacobus, Dan, to Buckbee-Mears Company. Matrix for forming mesh. 3,833,482, Cl. 204-11.000.

Jahn, Martin D., to Chicago Metallic Corporation. Concealed grid suspended ceiling structure with simplified installation. 3,832,816, Cl. 52-496.000.

Jahnke, Earl Milton, to Joslyn Manufacturing and Supply Company. Method and apparatus for installing anchors. 3,832,860, Cl. 61-53.580.

Jahnke, Earl Milton; and Petres, Stephen Anthony, to Joslyn Manufacturing and Supply Company. Method and apparatus for installing anchors. 3,832,861, Cl. 61-53.580.

Jakob, Horst, to Societe Financiere Francaise de Licences et Brevets. Process for the manufacture of a row of linking components for a slide fastener. 3,833,707, Cl. 264-285.000.

James, Pierre Lucien Jules, to U.S. Philips Corporation. Device for examining a patient in particular by means of X-rays. 3,833,813, Cl. 250-446.000.

Jamison, Mickey B.: *See—*
McMinn, Robert W.; and Jamison, Mickey B., 3,833,056.

Janssen, Willem P. H. A.: *See—*
Vola, Mathias J. J. M.; and Janssen, Willem P. H. A., 3,833,296.

Jaquiss, Donald B. G., to General Electric Company. Oxidatively stable polycarbonate composition. 3,833,537, Cl. 260-45.80a.

Jarvinen, Uro Tapio; and Salminen, Olli Olavi. Headlight wiper. 3,832,750, Cl. 15-250.160.

Jefferson Chemical Company, Inc.: *See—*
Schulze, Heinz; and Marquis, Thomas, 3,833,650.

Jeffreys, Roy A.; and Mellows, Susan M., to Eastman Kodak Company. Novel merocyanine dyes. 3,833,566, Cl. 260-240.100.

Jenkins, John P., to International Tepetronics Corporation. Cassette tape transport with universally adjustable head. 3,833,925, Cl. 360-109.000.

Jenkner, Herbert, to Chemische Fabrik Kalk GmbH. Process for bromomethylating aromatic hydrocarbons. 3,833,666, Cl. 260-612.00r.

Jered Products, Inc.: *See—*
Pottinger, Arthur D.; Ryder, William V., Jr.; and Shuert, Lyle H., 3,832,955.

Jerussi, Robert A.: *See—*
Orlando, Charles M.; Emerick, Carl M.; and Jerussi, Robert A., 3,833,525.

Jin, Kunio: *See—*
Sakazume, Yugoro; Oshima, Akio; Jin, Kunio; Nakano, Masashi; and Uchida, Takashi, 3,833,379.

Jirkovsky, Ivo: *See—*
Demerson, Christopher A.; Humber, Leslie G.; Santroch, George; Dobson, Thomas A.; and Jirkovsky, Ivo, 3,833,575.

Jobes, Forrest C., Jr.; and Hickok, Robert L., Jr., to Mobil Oil Corporation. Systems for measuring the properties of plasma with an ion probe. 3,833,851, Cl. 374-71.0eb.

Johnson, J. Arthur: *See—*
Stafford, John P.; Cuccio, Allen B. J.; and Johnson, J. Arthur, 3,833,888.

Johnson, Jack, to Hunt & Moscrop Limited. Textile fabric or paper shrinking machines. 3,832,758, Cl. 26-18.600.

Johnson, John G., to GTE Automatic Electric Laboratories, Incorporated. Telephone system trouble recorder. 3,833,773, Cl. 179-175.20r.

Johnson, Leighton Clifford, to Miles Laboratories, Inc. Automatic coverslipper apparatus. 3,833,449, Cl. 156-556.000.

Johnson, S. C., & Son, Inc.: *See—*
Kandathil, Thomas V.; and Johnson, S. C., & Son, Inc., 3,833,393.

Johnson, Theodore K.; and Sataloff, Joseph, to Marion Health and Safety, Inc. Method of making an aural hearing protecting device. 3,833,701, Cl. 264-129.000.

Johnson, Vern Harry; and Harms, Robert George. All-craft level. 3,832,782, Cl. 33-88.000.

Johnson, Wendell C.; Gomez, Nicolas G.; and Foret, Claude H., to Xerox Corporation. Apparatus for assembling a plated wire memory plane. 3,832,766, Cl. 29-203.0mm.

Johnston, Roy C.; and Sullivan, Lawrence B., to Texas Instruments Incorporated. Method of producing a matched parameter acceleration cancelling hydrophone. 3,832,762, Cl. 29-25.350.

Johnston, William W. Environmental module. 3,832,810, Cl. 52-67.000.

Jones, Graham P.; and Mahn, Frederick R., to Drew Chemical Corporation. Determination of water content of liquid mixtures. 3,833,340, Cl. 23-230.0hc.

Jones, Harry M.; Grinstead, Dale T.; and Fickes, Jack O., to Timken Company, The. Bearing assembly with vent means in the bearing thereof. 3,833,277, Cl. 308-180.000.

Jones, James V.: *See—*
Ohlberg, Stanley M.; and Jones, James V., 3,833,388.

Jones, Wylie T.: *See—*
Waldbauer, Henry L., Jr.; Jones, Wylie T.; and Flippo, Edward J., Jr., 3,833,030.

Joos, Pierre Emmanuel, to Continental Linoleum Uion Bertiebs AG. Structured sysnthetic web material and method for the production thereof. 3,833,703, Cl. 264-167.000.

Joslyn Manufacturing and Supply Company: *See—*
Jahnke, Earl Milton, 3,832,860.
Jahnke, Earl Milton; and Petres, Stephen Anthony, 3,832,861.

Jung, Dieter: *See—*
Fries, Walter; Hachmann, Klaus; Jung, Dieter; Neuhausen, Peter; and Walter, Dieter, 3,833,506.

Jurid Werke GmbH: *See—*
Gerloff, Gunter; Mertl, Klaus; and Volker, Ulrich, 3,833,344.

Just, George E.: *See—*
Just, George E.; and Simonovitch, Chaim (said Simonovitch assor. to said), 3,833,656.

Just, George E.; and Simonovitch, Chaim, said Simonovitch assor. to said Just, George E. Intermediates for producing prostaglandins. 3,833,656, Cl. 260-586.00r.

K G Engineering, Inc.: *See—*
Girvin, Robert H. III, 3,832,901.

Kabushiki Kaisha Tokai Rika Denki Seisakusho: *See—*
Usami, Susumu; Goto, Yashuiro; and Yamashita, Takashi, 3,832,902.

Kabushiki Kaisha Tomoku: *See—*
Kashiwa, Yoshikazu; Takagi, Kunio; Kezuka, Seiju; Kuroda, Rikio; Hirayama, Toshiharu; Kamiya, Takeshi; and Ono, Masayuki, 3,833,440.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See—*
Nakayama, Shozo; Kurahashi, Masayuki; and Sugiura, Tuneo, 3,833,318.

Kahler, Charles; and Kimes, Lucas James, to Boeing Company, The. Thrust control apparatus for pod mounted engine. 3,833,187, Cl. 244-12.00d.

Kai, Fumio: *See—*
Mase, Sadaaki; Seiki, Shigeo; Kai, Fumio; Watanabe, Tetsuro; and Iwata, Michiaki, 3,833,735.

Kaiser Industries, Inc.: *See—*
Young, Robert R.; and Medland, Robert W., 3,833,140.

Kakei, Jun; and Yamaguchi, Hirotsugu, to Nissan Motor Company. Defroster. 3,832,939, Cl. 98-2.090.

Kalle Aktiengesellschaft: *See—*
Beissel, Dieter; Dinter, Peter; and Andra, Klaus, 3,832,973.

Kalnberz, Viktor Konstnatinovich. Endoprosthesis for the penis and a method of endoprosthetic repair. 3,832,996, Cl. 128-79.000.

Kalz, Dietmar; and Wolfrum, Gerhard, to Bayer Aktiengesellschaft. Perinone dyestuffs. 3,833,583, Cl. 260-256.40q.

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Kato, Tadashi; Fujita, Michitaka; Kamakura, Masahi; Mizuta, Yutaka; Koyanagi, Hiroki; and Mizoguchi, Takuo, 3,832,788.

Kamijo, Hirotaka: *See—*
Kubota, Koji; Onoda, Takiko; Kamijo, Hirotaka; Yoshinaga, Fumihiro; and Okumura, Shinji, 3,833,473.

Kaminow, Ivan Paul; and Weber, Heinz Paul, to Bell Telephone Laboratories, Incorporated. Coupling arrangements for dielectric and metal-clad optical waveguides. 3,833,284, Cl. 350-96.0wg.

Kamiya, Takeshi: *See—*
Kashiwa, Yoshikazu; Takagi, Kunio; Kezuka, Seiju; Kuroda, Rikio; Hirayama, Toshiharu; Kamiya, Takeshi; and Ono, Masayuki, 3,833,440.

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Kamp, Heinz: *See—*
Derich, Josef; Kamp, Heinz; and Frehn, Gunter, 3,832,868.

Kandathil, Thomas V.; and Johnson, S. C., & Son, Inc. Fabric-stiffening composition and process. 3,833,393, Cl. 106-212.000.

Kane, Jacqueline C., to Stauffer Chemical Company. Method of manufacturing synthetic cryolite. 3,833,713, Cl. 423-465.000.

Kaneko, Toshiaki: *See—*
Tatsuke, Shogo; Yanagisawa, Osamu; and Kaneko, Toshiaki, 3,833,345.

Kaneko, Tutomu; Turumi, Takashi; Emori, Shuichi; and Ito, Ken, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for the manufacture of a non-woven web of continuous filaments through the wet stretch spinning method. 3,833,438, Cl. 156-167.000.

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Muto, Masataro; Nishioka, Shingo; Naka, Toshihiro; Kanesaki, Akio; and Tokumura, Kanae, 3,832,945.

Kanjanavanit, Rachot. Method and apparatus for spread-foot piles. 3,832,859, Cl. 61-53.600.

Kanner, Bernard: *See—*
Prokai, Bela; and Kanner, Bernard, 3,833,512.

Kapilow, Marvin. Disposable ball point pen with eraser. 3,833,307, Cl. 401-195.000.

Kapitan, John R. Data mailing set. 3,833,167, Cl. 229-69.000.

Kappl, Gerhard; and Dehlink, Alous F., to Reichart, C., Optische Werke AG. Microscope transmitting light illumination system using the kokler system. 3,833,282, Cl. 350-87.000.

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Kashiwa, Yoshikazu; Takagi, Kunio; Kezuka, Seiju; Kuroda, Rikio; Hirayama, Toshiharu; Kamiya, Takeshi; and Ono, Masayuki, to Nisseki Plastic Chemical Co., Ltd., The and Kabushiki Kaisha Tomoku. Method of making hollow planar board of synthetic resin materil. 3,833,440, Cl. 156-244.000.

Kashuba, Vladimir Pavlovich; Mikhailov, Nikolai Pavlovich; Fridman, Lev Petrovich; and Rattenberg, Vadim Nikolaevich. Installation for the continuous casting of non-ferrous metals in a protective gas atmosphere. 3,833,050, Cl. 164-281.000.

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Kato, Fumio: *See*—
Suzuki, Takeo; Tomita, Fusao; Honda, Haruo; Shirahata, Kunikatsu; Deguchi, Takashi; and Kato, Fumio, 3,833,476.

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Katz, Daniel; and Syben, Peter H., to United States of America, Army. Ammunition round with non-rigid attachment of projectile to cartridge case. 3,832,951, Cl. 102-38.000.

Katz, Morris H.; and Durst, Jack R., to Pillsbury Company, The. Bakery products containing heat stable food fillings. 3,833,741, Cl. 426-94.000.

Kaufmann, Edward A. Locking bicycle securing device. 3,832,871, Cl. 70-227.000.

Kawabata, Shigeo: *See*—
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Kawano, Masahisa: *See*—
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Kawasaki Jyukogyo Kabushiki Kaisha: *See*—
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Keegan, James J.: *See*—
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Keim, Gerald I., to Hercules Incorporated. Reaction products of eiphalohydrin and polymers of diallylamine and salts therof and their use in paper. 3,833,531, Cl. 260-29.6cm.

Kelen, Tibor: *See*—
Balint, Gabriella, nee Berczi; Csonka, Lajos; Galambos, Gyorgy; Gomory, Pal; Kelen, Tibor; Nagy, Ferenc; Szerencz, Janos; and Tudos, Ferenc, 3,833,631.

Kelling, Leroy U. C., to General Electric Company. Anti-backlash servomotor drive system. 3,833,847, Cl. 318-630.000.

Kelly, Richard A.: *See*—
Balaz, Joseph K.; Kelly, Richard A.; and Schulze, Wolfgang, 3,832,815.

Kelly, Richard B.: *See*—
Rose, Clark B.; Kelly, Richard B.; and Ravitts, Richard B., 3,833,173.

Kemp, Richard V.: *See*—
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Kemper, James M., to Monogram Industries, Inc. Variable volume pump. 3,833,316, Cl. 417-307.000.

Kennard, Ronald Lester: *See*—
Moscony, John Joseph; and Kennard, Ronald Lester, 3,833,375.

Kennedy, Carl D. Production of macrocyclic compounds. 3,833,491, Cl. 204-158.00s.

Kerber, Hans: *See*—
Thummler, Ursus; Werner, Hugo; and Kerber, Hans, 3,833,354.

Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung: *See*—
Gyarmati, Erno; and Nickel, Hubertus, 3,833,470.

Kerns, Gary Paul; and McElroy, Raymond L., to Standard Hydraulics, Service of Charleston, Inc. Seal apparatus for oil driven gear motor. 3,833,226, Cl. 277-3.000.

Kerst, Al F., to Monsanto Company. Ethane diphosphonic acid esters. 3,833,690, Cl. 260-932.000.

Kessler, Kenneth Quentin: *See*—
Menzel, Alvin Lewis; Hiseler, Stanley Robert; Kessler, Kenneth Quentin; and Nelson, Edward George, 3,833,034.

Kessler, Lawrence P., to Eastman Kodak Company. Automatic searching film reader. 3,833,294, Cl. 353-27.000.

Keys, Melvin H.; and Semersky, Frank E., to Owens-Illinois, Inc. Polysaccharide cyclic carbamate containing compounds. 3,833,555, Cl. 260-209.00r.

Kezuka, Seiju: *See*—
Kashiwa, Yoshikazu; Takagi, Kunio; Kezuka, Seiju; Kuroda, Rikio; Hirayama, Toshiharu; Kamiya, Takeshi; and Ono, Masayuki, 3,833,440.

Khalil, Seyed. Microscopic symbols gauging system for type bar alignment. 3,833,106, Cl. 197-1.00r.

Kidde, Walter, & Company, Inc.: *See*—
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Kiehs, Karl: *See*—
Theobald, Hans; and Kiehs, Karl, 3,833,645.

Kiernan, Henry E., to Hydro-Stack Mfg. Corp. Hydraulic actuator. 3,832,851, Cl. 60-563.000.

Kiess, Raymond W.; and Stewart, Peter H. Digital direct reading colorimeter. 3,833,864, Cl. 331-94.500.

Kihara, Nobutoshi, to Sony Corporation. Magnetic recording and/or reproducing apparatus with cassette locking to prevent accidental removal. 3,833,921, Cl. 360-85.000.

Kikuchi, Akira; and Agatsuma, Takashi, to Hitachi, Ltd. Method of forming multi-layer interconnections. 3,833,434, Cl. 156-8.000.

Kikuchi, Masao: *See*—
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Kimes, Lucas James: *See*—
Kahler, Charles; and Kimes, Lucas James, 3,833,187.

Kinast, Norbert, to Daimler-Benz Aktiengesellschaft. Device for electrically connecting the ends of electrical conductors. 3,833,878, Cl. 339-208.000.

Kinetics International Corporation: *See*—
Hurst, Gerald L., 3,832,950.

King, Donald L.: *See*—
Gebhardt, Richard A.; Priester, Willis M.; Muchlinski, Donald A.; King, Donald L.; Parke, Donald P.; Goldberg, Gerald M.; Scheidler, Stuart P.; and Sidlo, Richard, 3,833,904.

Kirby, Raymond L., Jr., to Monarch Marking Systems, Inc. Printing apparatus. 3,832,943, Cl. 101-103.000.

Kirk, Donald, Jr.; and Paolini, Michael J., to Computer Television Inc. Electronic bilateral communication system for commecial and supplementary video and digital signaling. 3,833,757, Cl. 178-5.600.

Kirley, Joseph F. Positive identification credit or ID card and apparatus. 3,833,929, Cl. 340-149.00a.

Kirsch Company: *See*—
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Kirsch, Ivan H.: *See*—
Gordon, Bernard M.; Neumann, Leopold; and Kirsch, Ivan H., 3,833,903.

Kiser, Fred, to Timesavers, Inc. Abrasive belt-type lumber planing machine. 3,832,808, Cl. 51-138.000.

Kiser, Fred W.; and Stinn, Allan J., to Timesavers, Inc. Wide belt sanding machine with improved work feeding means. 3,832,807, Cl. 51-138.000.

Kitahora, Nobuya: *See*—
Abe, Jinnosuke; Watanabe, Tetsuo; Take, Teruo; Fujimoto, Kentaro; Fujii, Tadashiro; Hotta, Yasue; Kobari, Sadami; Ishimura, Fumihiro; Kitahora, Nobuya; and Fukushima, Mituru, 3,833,558.

Kleen Test Products, Inc.: *See*—
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Kliemann, Colonel R., to Kleen Test Products, Inc. Mid-stream urine collector. 3,832,738, Cl. 4-110.000.

Kline, Donald D.: *See*—
Porter, William A.; Burough, Irvin G.; and Kline, Donald D., 3,833,305.

Kling, Alfred; and Specht, Viktor, to Benckiser-Knapsack GmbH. Agent for the treatment of cellulosic fiber materials and process. 3,833,517, Cl. 252-545.000.

Klinger, Dieter, to Mayer & Cie Maschinenfabrik. Apparatus for removing inserts from an electrically insulating strip. 3,832,765, Cl. 29-203.00b.

Klint, Russell D.: *See*—
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Klockner-Humboldt-Deutz Aktiengesellschaft: *See*—
Gego, Arno, 3,833,079.

Klopper, Friedrich; and Bullmann, Rolf, to Continental Gummi-Werke Aktiengesellschaft. Device for expanding raw pneumatic tires built up in flat form. 3,833,324, Cl. 425-52.000.

Klose, Werner: *See*—
Staendeke, Horst; and Klose, Werner, 3,833,662.

Knapsack Aktiengesellschaft: *See*—
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Kneip, Ruth: *See*—
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Kneuer, Rudolf, to Linde Aktiengesellschaft. Electromagnetic valve. 3,833,015, Cl. 137-334.000.

Knobloch, James O., to Standard Oil Company. Preparation of tetrachloroterephthaloyl chloride from chlorination of terephthaloyl chloride or terephtalic acid in a solution of chlorosulfnic acid. 3,833,652, Cl. 260-544.00m.

Knox, Walter R.; Taylor, Keith M.; and Tullman, Gerald M., to Monsanto Company. Ammoxidation of saturated hydrocarbons. 3,833,638, Cl. 260-465.300.

Knunyants, Ivan Ljudvigovich: *See*—
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Kobari, Sadami: *See*—
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Kobayashi, Kenji: *See—*
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Kobayashi, Teruo: *See—*
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Kobori, Toshio; and Ohba, Masaru, to Minolta Camera Kabushiki Kaisha. Exposure control system for a single lens reflex camera. 3,833,912, Cl. 354-24.000.

Koch, Wolfgang: *See—*
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Kochanowski, John E.: *See—*
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Kochert, Wilfried: *See—*
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Kodaira, Nobuhisa; and Kusunose, Mikio. Automatic temperature regulating device for use with apparatuses for heat treatment of synthetic yarn. 3,833,792, Cl. 219-388.000.

Koerner, Siefried; Schbiella, Erwin; Zirnstein, Peter; and Weise, Joachim. Sheet printing and stamping machine. 3,832,944, Cl. 101-232.000.

Kogure, Motoo; Muroi, Yasuji; and Ohta, Hideyasu, to Konishiroku Photo Industry Co., Ltd. Process for subbing photographic polyester films. 3,833,403, Cl. 117-47.00a.

Kohner Bros. Inc.: *See—*
Castanis, George, 3,833,222.

Koike, Hirotami; Sakurai, Shigekata; and Ueno, Katsuyoshi, to Nihon Denshi Kabushiki Kaisha. Scanning electron milcroscope with improved means for focusing. 3,833,811, Cl. 250-306.000.

Kolb, Karl Heinz: *See—*
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Komeya, Katsutoshi; Tsuge, Akihiko; Inoue, Hiroshi; and Murata, Hiroyuki, to Tokyo Shibaura Electric Co., Ltd. Heat resistant and strengthened composite materials and method for producing same. 3,833,389, Cl. 106-55.000.

Komodromos, Nicos M., to Du Pont de Nemours, E. I., and Company. Apparatus and process for measuring the light transmission of a pigmented paint film. 3,833,306, Cl. 356-205.000.

Komyak, Nikolai Ivanovich: *See—*
Efanov, Valery Pavlovich; Komyak, Nikolai Ivanovich; Ljuttsau, Vsevolod Grigorievich; and Rabodzei, Nikolai Vasilievich, 3,833,810.

Konishiroku Photo Industry Co., Ltd.: *See—*
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Sakazume, Yugoro; Oshima, Akio; Jin, Kunio; Nakano, Masashi; and Uchida, Takashi, 3,833,379.

Koosman, Ronald L.; and Charlson, Norman E., Jr. Apparatus and process for soil dewatering. 3,833,071, Cl. 175-57.000.

Koppers Company, Inc.: *See—*
Leaseburge, Gerald G.; and Morgret, Gordon L., 3,832,926.
Tucker, Linwood G., 3,833,478.

Korsgaard, Carl S. Float tow line guide. 3,832,746, Cl. 9-400.000.

Koster, Otto: *See—*
Gerdes, Werner; and Koster, Otto, 3,833,130.

Kotter, James Ivy. Pipe holding attachment for C-clamps and vises. 3,833,210, Cl. 269-276.000.

Kovacs, George E. Lawn mower hitch. 3,832,834, Cl. 56-6.000.

Koyanagi, Hiroki: *See—*
Kato, Tadashi; Fujita, Michitaka; Kamakura, Masahi; Mizuta, Yutaka; Koyanagi, Hiroki; and Mizoguchi, Takuo, 3,832,788.

Kraftwerke Union Aktiengesellschaft: *See—*
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Kramer, Fritz. Method of making a display device for plants. 3,833,696, Cl. 264-51.000.

Krarup, Henry R. Sheet sleeping-bag. 3,832,744, Cl. 5-336.000.

Kreuz, Otto; and Raab, Stephan, to Demag Aktiengesellschaft. Apparatus for the accurate weight casting of metal plates. 3,833,048, Cl. 164-155.000.

Krillic, Hobart M.: *See—*
Leary, Edward F.; and Krillic, Hobart M., 3,833,502.

Krugel, Werner: *See—*
Wampfler, Manfred; and Krugel, Werner, 3,833,776.

Krumbein, Fritz, to Bosch, Robert, Photokino G.m.b.H. Apparatus for intercepting and threading the leader of convoluted motion picture film or the like. 3,833,161, Cl. 226-92.000.

Kubota, Koji; Onoda, Takiko; Kamijo, Hirotaka; Yoshinaga, Fumihiro; and Okumura, Shinji, to Ajinomoto Co., Inc. Method for producing L-arginine by fermentation. 3,833,473, Cl. 195-29.000.

Kubota, Ltd.: *See—*
Murakami, Shinichi; and Hiraishi, Hisashi, 3,833,359.

Kuerten, Heribert; Nagel, Otto; Platz, Rolf; and Sinn, Richard, to Badische Anilin-& Soda-Aktiengesellschaft. Method and apparatus for mixing gas and liquid. 3,833,719, Cl. 423-659.000.

Kumada, Akio, to Hitachi, Ltd. Holographic memory with ferroelectric-ferrorelastic page composer. 3,833,281, Cl. 350-3.500.

Kumagai, Kunio: *See—*
Hara, Ryoichi; Kumagai, Kunio; and Ogino, Tadao, 3,833,184.

Kumagai, Mituru; Sasaoka, Takeshi; and Nakayama, Yoshiaki, to Fuji Shashin Film Kabushiki Kaisha and Ikegami Tsushinki Co., Ltd. Color television signal generator. 3,833,756, Cl. 178-5.40r.

Kunig, Horst. Detection of absence of concentration and coherence in a subject. 3,833,083, Cl. 180-99.000.

Kurahashi, Masayuki: *See—*
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Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
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Kusaka Rare Metal Products Co., Ltd.: *See—*
Kusaka, Toshihisa, 3,833,361.

Kusaka, Toshihisa, to Kusaka Rare Metal Products Co., Ltd. Method for adding special elements to molten pig iron. 3,833,361, Cl. 75-130.00b.

Kushlefsky, Bernard G.: *See—*
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Kusunose, Mikio: *See—*
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La Bahn, William C.; MacNary, Robert G.; and Smith, William R., to General Electric Company. Method for automatically stripping a sectionalized mold from a cast. 3,833,049, Cl. 164-131.000.

La Societe Anonyme dite: Pneumatiques, Caoutchouc Manufacture et Plastiques Kleber-Colombes: *See—*
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La Telemecanique Electrique: *See—*
Faffart, Georges Andre, 3,833,778.

Labofina S.A.: *See—*
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Ladd, John R., to General Electric Company. N(N'maleimidomethyl) citraconimide. 3,833,609, Cl. 260-326.260.

Ladewig, Elmer E.: *See—*
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Ladewig, Lester G.: *See—*
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Ladewig, Lyle H.; Ladewig, Elmer E.; and Ladewig, Lester G. Feeding device. 3,832,977, Cl. 119-52.00r.

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L'Air Liquid, Societe Anonyme Pour l'Etude et l'Exploitation des Procedes George Claude: *See—*
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L'Air Liquide Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude: *See—*
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Laird, Maurice. Safety belt system. 3,833,238, Cl. 280-150.0sb.

Lambda Development Ltd.: *See—*
Cappelletti, Richard R., 3,832,997.

Lamme, Robert E., to High Hill, Inc. Combined bracket and lug nuts for wheel covers. 3,833,266, Cl. 301-37.0at.

Land, Edwin H.; and Bloom, Stanley M., to Polaroid Corporation. Photographic products incorporating anti-reflection coatings. 3,833,368, Cl. 96-3.000.

Land, Edwin H., to Polaroid Corporation. Photographic products including rupturable containers. 3,833,382, Cl. 96-76.00c.

Land, Edwin H.; and Delahunt, Robert M., to Polaroid Corporation. Planar battery, process of manufacture thereof and film cassette including the same. 3,833,427, Cl. 136-111.000.

Landgraf, Walter David. Universal typewriter ribbon spool. 3,833,109, Cl. 197-175.000.

Lang, Armin, to Zahnradfabrik Friedrichshafen AG. Servo steering device, especially for automobiles. 3,832,849, Cl. 60-386.000.

Lang, David M.; Nelmark, Jack D.; and Smith, Matthew, to Bucyrus-Erie Company. Breakout wrench. 3,832,918, Cl. 81-57.330.

Lang, Karl, to Leitz, Ernst, G.m.b.H. Apparatus for no-contact measurement of the velocity the path or the range of objects. 3,833,299, Cl. 356-28.000.

Langford, Orville L. Three-blade arrangement for electrically powered knife. 3,832,773, Cl. 30-272.00a.

Langley, Keith William: *See—*
Parfitt, Maurice; and Langley, Keith William, 3,833,271.

Langlois, Gary N., to Holosonics, Inc. Acoustical imaging equipment capable of inspecting an object without submerging the object in a liquid. 3,832,888, Cl. 73-67.50h.

Langlois, Roland E.; and Roberson, Cletis L., to Owens-Corning Fiberglas Corporation. Fibrous product and apparatus for and method of producing it. 3,832,840, Cl. 57-140.00j.

Laobfina S.A.: *See—*
Hanotier-Bridoux, Monique G.S.; and Hanotier, Jacques D.V., 3,833,599.

Laor, Dan: *See—*

Shoshani, Avraham; Laor, Dan; Benzeev, Dan; Inbar, Dan; and Sabbah, Benjamin Prosper, 3,833,795.

Lare, Paul J.; and Divecha, Amarnath P., to Melpar, Inc. Process for consolidation and extrusion of fiber-reinforced composites. 3,833,697, Cl. 264-60.000.

Larsen, Glen D., to Southern Railway Company. Open top railway freight car having bulb angle element along top edge of sidewalls. 3,833,135, Cl. 214-64.200.

Larsen, James V.: *See—*
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Lassmann, Gustav; and Rieger, Peter, to Schwarzer Company. Method for the production of microtome slices and device for the implementation of the method. 3,832,923, Cl. 83-16.000.

Laurent, Henry; Wiechert, Rudolf; Prezewowsky, Klaus; Hofmeister, Helmut; Gerhards, Erich; Mengel, Klaus; and Kolb, Karl Heinz, to Schering Aktiengesellschaft. Novel pregnanoic acid derivatives. 3,833,563, Cl. 260-239.550.

Lavallee, Lionel. Diamond drills. 3,833,077, Cl. 175-325.000.

Lavallee, Robert G.: *See—*
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Lawrence, Elinor W. Lawn cleaning tool. 3,833,250, Cl. 294-50.600.

Laymon, Marvin D.: *See—*
Bell, Robert F.; Dinger, James R.; Laymon, Marvin D.; and Pazemenas, Vytautas V., 3,833,897.

Lazarre, Flavien; Rozand, Jacques; Blu, Gilbert; and Bimond, Jean-Pier, to Societe Nationale des Petroles d'Aquitaine. Flare installation for the combustion of hydrocarbon gas with prior admixing of air. 3,833,335, Cl. 431-202.000.

Lazarus, Stanley David; and Dementi, Brian Armstead, to Allied Chemical Corporation. Manufacture of thermally stabilized polyehtylene terephthalate. 3,833,542, Cl. 260-45.75c.

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Nobel, Fred I.; and Yoen, Lazaro C., 3,833,486.

Leary, Edward F.; and Krillic, Hobart M., to Nalco Chemical Company. Method for improving the adherence of metalworking coolants to metal surfaces. 3,833,502, Cl. 252-49.500.

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Grier, Nathaniel; and Lederer, Seymour J., 3,833,731.

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Lee, Gim F., Jr., to General Electric Company. Composition of a polyphenylene ether, a block copolymer of a vinyl aromatic compound with a conjugated diene and a graft interpolymer of an acrylic monomer with a diene rubber. 3,833,687, Cl. 260-876.00r.

Lee, Raymond, Organization, Inc.: *See—*
Backwell, James, 3,833,089.

Lee, Raymond, Organization, Inc., The: *See—*
Honas, Norbert W., 3,833,148.
Iozzio, Phyllis, 3,833,149.
Isdith, Francisco J., 3,833,215.
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Lee, Raymond, Organization, The: *See—*
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Lee-Norse Company: *See—*
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Leeson, James L., to Woodward Govenor Company. Speed governor with fuel rate control. 3,832,846, Cl. 60-39.28r.

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Schoen, Wolfgang; Friedrich, Rainer; and Liebscher, Johannes, 3,833,127.

Leinkram, Charles S.; Oaks, William D.; Eisele, John A.; and Faraday, Bruce J., to United States of America, Navy. Solar cell array. 3,833,425, Cl. 136-89.000.

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Lang, Karl, 3,833,299.
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Lemmon, Norman Frederick, to Deere & Company. Tractor front end construction. 3,833,080, Cl. 180-79.20r.

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Leonard, Ronald J., to Baxter Laboratories, Inc. Self-valving fluid reservoir and bubble trap. 3,833,013, Cl. 137-171.000.

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Les Ateliers de Construction Mecaniques C. & A.: *See—*
Class, Jean, 3,833,446.

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Crotty, James M.; Geary, Daniel C.; Levy, Edward F.; Lopiekes, Dolores V.; Raymond, Robert L.; and Siegal, Bernard, 3,833,720.

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Haupt, Gerhard; and Kochert, Wilfried, 3,833,883.
Louis, Gerhard; and Bohm Harald, 3,833,424.
Pohl, Franz Arthur; and Bohm, Harald, 3,833,423.

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Lieckfeld, Werner, to Bran & Lublc. Apparatus for assisting discharge of particulate solids from a bin. 3,833,151, Cl. 222-193.000.

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Hock, Fromund, 3,833,302.

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Chakrabarti, Jiban Kumar; and Szinai, Stephen Slomo, 3,833,653.

Lin, Kang, to Du Pont de Nemours, E. I., and Company. Herbicidal oxadiazines and thiadiazines. 3,833,577, Cl. 260-244.000.

Linarducci, Josep S.: *See—*
Rapoza, Edward J.; Siegel, Maxwell E.; Estelle, Weems E.; Petrucci, Pasquale M.; Linarducci, Josep S.; Hamma, John; and Montgomery, John, 3,832,969.

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Lindstrom, Roald E.: *See—*
Haskett, Philip R.; Bauer, Donald J.; Lindstrom, Roald E.; and Elges, Carl H., III, 3,833,717.

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Linz, Arthur: *See—*
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Linza Ltd.: *See—*
Wicht, Paul; and Volken, Kurt, 3,833,530.

Lipe-Rollway Corporation: *See—*
Linn, Donald F.; Bush, Carl D.; and Taylor, Frederick P., 3,833,099.

Lipman, Stephen C.: *See—*
Craggs, Donald E.; Gillen, Richard S.; and Lipman, Stephen C., 3,833,060.

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Breuw, Heinz; Mischke, Hans-Jurgen; and Lippeck, Franz, 3,832,904.

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Breuw, Heinz; Mischke, Hans-Jurgen; and Lippeck, Franz, 3,832,904.

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Iannazzi, Fred D.; Rafferty, John W.; Sparrow, Donald B.; and Strauss, Richard, 3,833,460.
Papanastassiou, Zinon B.; Atkinson, Edward R.; and McRitchie, Donna D., 3,833,592.

Livingston, William L., to Factory Mutual Research Corporation. System and method for extinguishing fire. 3,833,062, Cl. 169-15.000.

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Ljuttsau, Vsevolod Grigorievich: *See—*
Efanov, Valery Pavlovich; Komyak, Nikolai Ivanovich; Ljuttsau, Vsevolod Grigorievich; and Rabodzei, Nikolai Vasilievich, 3,833,810.

Lochet, Jean A.: *See—*
Bick, Maurice; and Lochet, Jean A., 3,833,488.

Lockheed Aircraft Corporation: *See—*
Wickersheim, Kenneth A.; and Buchaman, Robert A., 3,833,862.

Lodder, Adolf E., to Dominion Bridge Company Limited. Underfloor power supply system for a vehicle. 3,833,775, Cl. 191-12.00r.

Loeffler, Otto Ernest, to NL Industries, Inc. Preparation of antimony glycoloxide. 3,833,630, Cl. 260-446.000.

Loev, Bernard: *See—*
Mechoulam, Raphael; Houry, Shlomo; and Loev, Bernard, 3,833,611.

Lofton, Melvyn Forrest. Device for making yarn pompons and flowers. 3,833,157, Cl. 223-46.000.

Logan, Ralph Andre; Schwartz, Bertram; Tracy, Joseph Charles, Jr.; and Wiegmann, William, to Bell Telephone Laboratories, Incorporated. Dielectric optical waveguides and technique for fabricating same. 3,833,435, Cl. 156-11.000.

Logemann, Willy: *See—*
Ambrogi, Vittori; Logemann, Willy; Parenti, Marcantonio; and Tommasini, Raffaele, 3,833,578.

Logue, George E. Combined load cover and windshield protector for dump truck. 3,833,255, Cl. 296-137.00b.

Loh, Shiu-Chang. Back-fire loop antenna. 3,833,908, Cl. 343-741.000.

Longenecker, Levi S. Suspended roof and end wall construction for reverberatory furnace. 3,832,959, Cl. 110-99.00r.

Longin, Robert: *See—*
Aubert, Jean-Paul; Longin, Robert; and Millet, Jacqueline, 3,833,474.

Lonnroth, Borje Gunnar Arne, to Statens Vag-Och Trafikinstitut. Torque meter having a movement transmission member. 3,832,896, Cl. 73-136.00a.

Lontz, John Frank; and D'Alonzo, Richard Titus. Sweetening composition. 3,833,745, Cl. 426-217.000.

Loomis, Donald D. Prime mover with internal power source. 3,833,841, Cl. 318-139.000.

Lopiekes, Dolores V.: *See—*
Crotty, James M.; Geary, Daniel C.; Levy, Edward F.; Lopiekes, Dolores V.; Raymond, Robert L.; and Siegal, Bernard, 3,833,720.

Lorenz, Johann; and Willeitner, Eberhardt, to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Damping bearing. 3,833,274, Cl. 308-143.000.

Loschilin, Evgeny Dmitrievich; Borodin, Valerian Alexeevich; Zabotin, Alexandr Alexandrovich; Onikov, Eduard Arshakovich; and Galperin, Alexandr Lvovich. Beat-up mechanism for looms. 3,833,025, Cl. 139-12.000.

Lotter, Robert F.: *See—*
Bobel, David J.; and Lotter, Robert F., 3,833,784.

Louis, Gerhard; and Bohm Harald, to Licentia Patent-Verwaltungs-G.m.b.H. Gas fuel cell battery having bipolar graphite foam electrodes. 3,833,424, Cl. 136-86.00r.

Luberoff, Benjamin Joseph: *See—*
Gelbein, Abraham Perry; Luberoff, Benjamin Joseph; Sze, Morgan Chuan-Yuan; and Whitehead, Richard T., 3,833,647.

Lubin, Paul D.: *See—*
Chiklis, Charles K.; and Lubin, Paul D., 3,833,369.

Lubrizol Corporation, The: *See—*
Bork, John Fred, 3,833,624.

Lucas, Joseph, (Industries) Limited: *See—*
Stokes, Roger Francis; and Hunt, Brian John, 3,833,348.

Lucero, Daniel P.; Barden, James D.; and Paljug, Joseph W., to Meloy Laboratories, Inc. Apparatus for precisely controlled dilution of fluid samples. 3,833,016, Cl. 137-340.000.

Luchi, Vinicio. Circular knitting machine and articles knitted thereby. 3,832,867, Cl. 66-9.00r.

Luck, Russell M.: *See—*
Repsher, Robert W.; Gainer, Gordon C.; Luck, Russell M.; and Davies, David H., 3,833,392.

Lummus Company, The: *See—*
Gelbein, Abraham Perry; Luberoff, Benjamin Joseph; Sze, Morgan Chuan-Yuan; and Whitehead, Richard T., 3,833,647.

Lundgreen, Michael W., to Collins Radio Company. Coherent filter. 3,833,855, Cl. 328-167.000.

Lupkas, Raymond R.; Freeman, Gerald C.; and Check, Frank T., Jr., to Pitney-Bowes, Inc. Computer responsive supplemental printer. 3,832,946, Cl. 101-93.00c.

Luth, Friedrich August Karl. Method and apparatus for injecting oil into the tuyeres of a blast furnace. 3,833,356, Cl. 75-41.000.

Luxor Industri Aktiebolag: *See—*
Pettersson, Karl Albin Bertil, 3,833,225.

Lyon, Boyce M.: *See—*
Eskridge, Brewster B.; Fink, Roger H.; and Lyon, Boyce M., 3,832,759.

M & T Chemicals Inc.: *See—*
Bierman, Clarence R.; and Welks, John D., 3,833,458.
Ejk, Adam J.; and Ringwood, Robert C., Jr., 3,833,519.
Guthrie, Roger T.; and Kushlefsky, Bernard G., 3,833,543.

Macewan, William Ritchie: *See—*
Holliday, Charles Harry; Macewan, William Ritchie; Mullin, John Brian; and Webb, Alan Edward Valender, 3,833,342.

MacGregor, William Roderick: *See—*
Spicer, Dalton Harold; Perdue, George Francis; and MacGregor, William Roderick, 3,833,136.

MacKenzie, Donald R.; Fajer, Jack; and Smol, Robert, to United States of America, Atomic Energy Commission. Vapor phase substitution fluorination of aromatics with xenon difluoride. 3,833,581, Cl. 260-250.00r.

MacKenzie, Gerald L.: *See—*
Moy, Bertram K.; MacKenzie, Gerald L.; and Chang, Marquerite S., 3,833,432.

MacKenzie, Harold B.; Anderson, Ingvar G.; and Montgomery, William T. S., Jr., to New Life Foundation. Pneumatic refuse material separation system. 3,833,117, Cl. 209-3.000.

MacKenzie, Joseph H., Jr. Modular supporting assembly. 3,833,279, Cl. 312-257.0sk.

Mackenzie, Robert D.: *See—*
Grisar, J. Martin; and Mackenzie, Robert D., 3,833,559.

Macker, John Arthur, to Burroughs Corporation. Input/output system for a microprogram digital computer. 3,833,930, Cl. 340-172.500.

MacNary, Robert G.: *See—*
La Bahn, William C.; MacNary, Robert G.; and Smith, William R., 3,833,049.

MacPherson, Roger; and Alsina, Pierre A., to American Tatra Inc. Apparatus for testing front wheel alignment of automotive vehicles. 3,832,786, Cl. 33-288.000.

MacPherson, Roger. Safety mechanism for automobile lifts. 3,833,091, Cl. 187-8.490.

Madrid, Robert William; and Hagenbach, Robert Joseph, to Xerox Corporation. Carrier compositions. 3,833,366, Cl. 96-1.0sd.

Madsen, Eigil, to Nielsen, H., & Son Maskinfabrik A/S. Overhead or gantry crane with a yoke carrying electromagnets. 3,833,129, Cl. 212-14.000.

Maertin, Klaus Paul; and Combs, Stewart Cecil. Gravity actuated hinged door mounting. 3,832,754, Cl. 16-152.000.

Maertin, Klaus Paul; and Combs, Stewart Cecil. Door hinges. 3,832,755, Cl. 16-156.000.

MaGee, Philip S., to Chevron Research Company. N-Acyl-0-hydrocarbylphosphoroamidothioate salts. 3,833,623, Cl. 260-402.500.

Mahan, John E.: *See—*
Gardner, Lloyd E.; and Mahan, John E., 3,833,679.

Mahlich, Gotthard Christoph: *See—*
Engelstatter, Heinz; and Mahlich, Gotthard Christoph, 3,833,834.

Mahn, Frederick R.: *See—*
Jones, Graham P.; and Mahn, Frederick R., 3,833,340.

Mahoney, James D. Cargo transporting and handling vehicle. 3,833,139, Cl. 214-518.000.

Maier, Clarence C.: *See—*
Angle, Milton A.; Blair, Gerald E.; and Maier, Clarence C., 3,833,347.

Maier, Karl. Chuck. 3,833,231, Cl. 279-116.000.

Makynen, Arvi, to Ovako Oy. Protective device for use in the maintenance of foundry ladles. 3,833,206, Cl. 266-1.00r.

Malavazos, Arthur J.; and Urdal, Jan, to A. J. M. Research Corporation. High speed punch. 3,833,169, Cl. 234-110.000.

Malec, Robert E., to Ethyl Corporation. Oil composition. 3,833,496, Cl. 252-33.600.

Mallinckrodt Chemical Works: *See—*
Brown, James L.; and Harris, Orval A., 3,833,509.

Mallory, Edwin E., to National Standard Company. Tire building apparatus of building tires. 3,833,444, Cl. 156-400.000.

Mallory, Edwin E.; and Bryant, Emerson C., to National-Standard Company. Tire building apparatus for building tires. 3,833,445, Cl. 156-401.000.

M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft: *See—*
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Manello, Jeannette S.: *See—*
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Mannesmann Leichtbau GmbH: *See—*
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Manning, James M.: *See—*
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Manning, Robert E., to Sandoz-Wander, Inc. p-Phenylenediamines as hypolipidemics. 3,833,734, Cl. 424-330.000.

Marchandise, Victor Felix: *See—*
Delgendre, Jacques Claude; Guigot, Vincent Louis; and Marchandise, Victor Felix, 3,832,949.

Marciandi, Franco: *See—*
Moreschini, Luciano; Marciandi, Franco; Petrini, Guido; and Faletti, Franco, 3,833,639.

Marcoux, Leo, to Texas Instruments, Incorporated. Liquid level indicating system. 3,833,874, Cl. 337-100.000.

Marcus, Ira R.; and Muckelroy, William L. Microminiature monolithic ferroceramic transformer. 3,833,872, Cl. 336-83.000.

Mardiguian, Jean; and Fournier, Pierre, to Societe a Responsabilitee Limitee dite: MAR-PHA Societe d'Etudes et d'Exploitation de Marques. Process for the preparation of isobornylphenol. 3,833,671, Cl. 260-619.00d.

Marion Health and Safety, Inc.: *See—*
Johnson, Theodore K.; and Sataloff, Joseph, 3,833,701.

Markowitz, Isral J., to Stem Development Corp. Collapsible dispensing container. 3,833,154, Cl. 222-212.000.

Maroschak, Ernest J. Corrugated plastic drainage pipe with interrrupted rib. 3,832,855, Cl. 61-10.000.

Marquis, Thomas: *See—*
Schulze, Heinz; and Marquis, Thomas, 3,833,650.

Marsalka, Joseph P.; and Spademan, Charles F., to MI², Inc., mesne. Magnetic tape data system. 3,833,892, Cl. 340-172.500.

Marshall, John. Single unit air-water heating appliance. 3,833,170, Cl. 236-9.00r.

Martel, Jacques; and Buendia, Jean. Novel esters and their preparation. 3,833,564, Cl. 260-240.00r.

Martens, Ernst, to Spiroll Corporation Ltd. Method of panel connection and connectors therefor. 3,832,817, Cl. 52-583.000.

Martin, Clifford W. Vehicle signal. 3,832,968, Cl. 116-28.00r.

Martin, Heinz: *See—*
Ziegler, Karl; Martin, Heinz; Breil, Heinz; and Holzkamp, Erhard, 3,833,551.

Martin, Louis F., to Standard Packaging Corporation. Evacuation and venting system for vacuum packages and vacuum chamber therefor. 3,832,828, Cl. 53-112.00a.

Martyny, William C.; and Olwert, Ronald J., to General Electric Company. Surface treatment of fluorescent lamp bulbs and other glass objects. 3,833,399, Cl. 117-33.50l.

Marvosh, Daniel. Machine for making tabletops. 3,833,036, Cl. 144-144.00a.

Marzek, Ronald A.: *See—*
United STates of America, National Aeronautics and Space Administration: with respect to an invention of, 3,832,764.

Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft: *See—*
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Mase, Sadaaki; Seiki, Shigeo; Kai, Fumio; Watanabe, Tetsuro; and Iwata, Michiaki, to Meiji Seika Kaisha, Ltd. Germicidal use of 2,3,3-tri-iodoallylalcohol. 3,833,735, Cl. 424-343.000.

Masson Scott Thrissell Engineering Limited: *See—*
Bossons, Walter Howard, 3,833,843.

Mathews, Bernard C. 5 Discharging hopper for grain dryer. . 3,833,137, Cl. 214-170.000.

Matsuhisa, Koh, to Ricoh Co., Ltd. Typewriter. 3,833,107, Cl. 197-18.000.

Matsukawa, Hiroharu; and Hayashi, Takao, to Fuji Photo Film Co., Ltd. Sheet with improved image durability. 3,833,400, Cl. 117-36.200.

Matsumoto, Seiji: *See—*
Eukushima, Osamu; Sato, Masamichi; and Matsumoto, Seiji, 3,832,975.
Hiwano, Kunio; Fukagawa, Masaki; Honjo, Satoru; Iwasa, Masakazu; and Matsumoto, Seiji, 3,833,365.

Matsumoto, Shuntetsu: *See—*
Yatabe, Teruo; and Matsumoto, Shuntetsu, 3,833,759.

Matsumura, Tetso; Tsuzuki, Akira; Tanaka, Kazuo; and Suzuki, Choken, to Citizen Watch Company Limited. Push button type display correction mechanism on a timepiece. 3,832,844, Cl. 58-74.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
Atoji, Nobuhisa; and Aoi, Takahisa, 3,833,770.
Tanaka, Heiroku; and Onda, Katsuyoshi, 3,833,783.

Matthies, Dennis Lee, to RCA Corporation. Video discs having a methyl alkyl silicone coating. 3,833,408, Cl. 117-217.000.

Maurer, Ruprecht. Mandrel. 3,833,179, Cl. 242-46.400.

May & Baker Limited: *See—*
Clark, David William Harold, 3,833,394.

Mayer & Cie Maschinenfabrik: *See—*
Klinger, Dieter, 3,832,765.

Mayer, Nathan; and Sorrentino, Anthony P. Needle thread monitor to avoid runout of bobbin thread. 3,832,960, Cl. 112-219.00r.

Mc Caffery, William, Jr.: *See—*
Singleton, Jack S.; and Mc Caffery, William, Jr., 3,833,121.

Mc Dermott, David C.; Seymour, Errol V.; and Titus, Paul E., to Shell Oil Company. Method for cleaning gasoline storage tanks. 3,833,010, Cl. 134-24.000.

McAllister, Joseph D. Adjustable tent pole. 3,833,012, Cl. 135-15.0pq.

McAnespie, Donald, to Midland-Ross Corporation. Apparatus for elimianting water vapor from processed air. 3,833,205, Cl. 261-133.000.

McAvoy, James, to Imperial Chemical Industries Limited. Oxidation of hydrocarbons. 3,833,663, Cl. 260-610.00b.

McCarty, Eugene F., to Aktiebolaget Svenska Flaktfabriken. Manufacture of hardwood printing paper. 3,833,466, Cl. 162-142.000.

McClarrin, Edna M. Portable bathing chair for invalids. 3,832,740, Cl. 4-145.000.

McClure, Robert E., to Parks-Cramer Company. Textile yarn spinning machine with roving interruption apparatus and slotted guides. 3,832,839, Cl. 57-106.000.

McCole, Thomas P.: *See—*
Chen, Richard J.; and McCole, Thomas P., 3,833,381.

McColgin, William C.: *See—*
Webster, Frank G.; and McColgin, William C., 3,833,863.

McCombs, Howard L., Jr., to Bendix Corporation, The. Double acting snap action fluidic switch. 3,833,200, Cl. 251-35.000.

McConkey, Robert C.: *See—*
Noonan, John M.; Sutton, Richard C.; and McConkey, Robert C., 3,833,384.

McCumber, Ralph David, to Green, A. P., Refractories Co. Liner and process for combating wear in pneumatic transport systems. 3,833,267, Cl. 302-64.000.

McElroy, Raymond L.: *See—*
Kerns, Gary Paul; and McElroy, Raymond L., 3,833,226.

McKinney, Richard F., II. Indoor and outdoor debris pan. 3,833,249, Cl. 294-1.00r.

McLennan, Anthony Ian: *See—*
Ramsay, Melvin Murray; and McLennan, Anthony Ian, 3,833,763.

McManus, James M., to Pfizer Inc. 1,3,4,5 Tetrahydropyrrolo [4,3,2-d,e] isoquinolines and related compounds. 3,833,591, Cl. 260-288.00r.

McMinn, Robert W.; and Jamison, Mickey B., to Black, Sivalls & Bryson, Inc. High temperature cooling process and system. 3,833,056, Cl. 165-107.000.

McRitchie, Donna D.: *See—*
Papanastassiou, Zinon B.; Atkinson, Edward R.; and McRitchie, Donna D., 3,833,592.

McWilliams, Joseph Anthony; and Hughes, John Thomas. Electrical cooker unit for a ceramic glass plate type electrical cooker. 3,833,793, Cl. 219-464.000.

Mead Corporation, The: *See—*
Searborn, Paul E., 3,833,308.

Mechoulam, Raphael; Houry, Shlomo; and Loev, Bernard, to Yissum Research Development Company and Smith Kline & French Laboratories. 3,7-Methano-benzoxonin compounds. 3,833,611, Cl. 260-333.000.

Mediscience Corporation: *See—*
Bicher, Haim I.; and Sorenson, Lon A., 3,832,994.

Meditech Energy and Environmental Corporation: *See—*
Crosby, Philip C.; and Goyette, Robert J., 3,833,145.

Medland, Robert W.: *See—*
Young, Robert R.; and Medland, Robert W., 3,833,140.

Medtronic, Inc.: *See—*
Wingrove, Robert C., 3,833,005.

Mees, Robert D.: *See—*
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Meiji Seika Kaisha, Ltd.: *See—*
Mase, Sadaaki; Seiki, Shigeo; Kai, Fumio; Watanabe, Tetsuro; and Iwata, Michiaki, 3,833,735.

Meiller, Francois, to Produits Chimiques Pechiney-Saint-Gobain. Alkyl fluorohexahalogenoisopropoxycarboxylate silicon derivatives and polymers and copolymers thereof. 3,833,632, Cl. 260-448.20b.

Mellows, Susan M.: *See—*
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Meloy Laboratories, Inc.: *See—*
Lucero, Daniel P.; Barden, James D.; and Paljug, Joseph W., 3,833,016.

Melpar, Inc.: *See—*
Lare, Paul J.; and Divecha, Amarnath P., 3,833,697.

Mendenhall, Walter M., to Modern Display Plastics Inc. Interlocking display shelf arrangement. 3,832,957, Cl. 108-64.000.

Mengel, Klaus: *See—*
Laurent, Henry; Wiechert, Rudolf; Prezewowsky, Klaus; Hofmeister, Helmut; Gerhards, Erich; Mengel, Klaus; and Kolb, Karl Heinz, 3,833,563.

Menne, Heinz: *See—*
Benteler, Erich; Schirp, Wilhelm; Menne, Heinz; Eckhardt, Otto; and Mowe, Wilhelm, 3,833,053.

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Norton, Richard V., to Sun Research and Development Company. Ammonium aromatic carboxylate conversion to the corresponding acids. 3,833,646, Cl. 260-515.00p.

Noyes, Carlton F.: *See—*
Abita, Joseph L.; and Noyes, Carlton F., 3,833,298.

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Obeda, Edward G.: *See—*
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Oelsner, Manfred Wolfgang: *See—*
Behling, Rolf-Dieter; Oelsner, Manfred Wolfgang; and Zenke, Erich Gunther, 3,833,528.

Ogata, Nobuo. Rubber screen for a vibrating sieve. 3,833,120, Cl. 209-399.000.

Ogino, Tadao: *See—*
Hara, Ryoichi; Kumagai, Kunio; and Ogino, Tadao, 3,833,184.

Ogletree, William B. Erecting segmental spans. 3,832,748, Cl. 14-1.000.

Ogren, John R.: *See—*
Ang, Choh-Yi; Bailey, Robert F.; and Ogren, John R., 3,833,410.

Ohara, Takashi: *See—*
Wada, Masahiro; Yanagisawa, Isao; Ninumiya, Michikazu; and Ohara, Takashi, 3,833,649.

Ohba, Masaru: *See—*
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Ohi, Reiichi: *See—*
Hayashi, Katsumi; Ohi, Reiichi; and Shishido, Tadao, 3,833,372.

Ohlberg, Stanley M.; and Jones, James V., to PPG Industries, Inc. Method of manufacturing sheet and float glass at high production rates. 3,833,388, Cl. 106-25.000.

Ohms, Klaus-Peter: *See—*
Himmler, Gunther; and Ohms, Klaus-Peter, 3,832,905.

Ohta, Hideyasu: *See—*
Kogure, Motoo; Muroi, Yasuji; and Ohta, Hideyasu, 3,833,403.

Okabe, Koichi, to Shiba Electric Co., Ltd. Rotary head apparatus with dynamic air bearings having ceramic coatings. 3,833,924, Cl. 360-107.000.

Okita, Taisuke: *See—*
Usamoto, Teruyoshi; Okita, Taisuke; Yoshida, Nobuyuki; Hirooka, Masaaki; Taniguchi, Isoji; and Imai, Shyozaburo, 3,833,689.

Okumura, Shinji: *See—*
Kubota, Koji; Onoda, Takiko; Kamijo, Hirotaka; Yoshinaga, Fumihiro; and Okumura, Shinji, 3,833,473.

Oldham, Herman J.: *See—*
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Olin Corporation: *See—*
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Olinkraft, Inc.: *See—*
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Olson, Roger A.; and Mentone, Pat F., to Buckbee-Mears Company. Electroforming nickel copper alloys. 3,833,481, Cl. 204-3.000.

Olson, Roger F.: *See—*
Waner, Donald W.; and Olson, Roger F., 3,832,967.

Olwert, Ronald J.: *See—*
Martyny, William C.; and Olwert, Ronald J., 3,833,399.

Olyphant, Murray, Jr.; and Rohloff, Robert R., to Minnesota Mining and Manufacturing Company. Circuitry and method. 3,832,769, Cl. 29-626.000.

O'Mara, Lawrence R.: *See—*
Bachman, Richard T.; and O'Mara, Lawrence R., 3,833,075.

Onda, Katsuyoshi: *See—*
Tanaka, Heiroku; and Onda, Katsuyoshi, 3,833,783.

Onikov, Eduard Arshakovich: *See—*
Loschilin, Evgeny Dmitrievich; Boredin, Valerian Alexeevich; Zabotin, Alexandr Alexandrovich; Onikov, Eduard Arshakovich; and Galperin, Alexandr Lvovich, 3,833,025.

Ono, Iwao. Flush hosiery hanger. 3,833,159, Cl. 223-85.000.

Ono, Masayuki: *See—*
Kashiwa, Yoshikazu; Takagi, Kunio; Kezuka, Seiju; Kuroda, Rikio; Hirayama, Toshiharu; Kamiya, Takeshi; and Ono, Masayuki, 3,833,440.

Onoda, Takiko: *See—*
Kubota, Koji; Onoda, Takiko; Kamijo, Hirotaka; Yoshinaga, Fumihiro; and Okumura, Shinji, 3,833,473.

Original Plastic Bike, Inc.: *See—*
Thompson, William A., Jr., 3,833,242.

Orlando, Charles M.; Emerick, Carl M.; and Jerussi, Robert A., to General Electric Company. Phenolic blocked isocyanate compositions containing a heterocyclic nitrogen catalyst. 3,833,525, Cl. 260-2.5ac.

Oronzio de Nora Impianti Elettrochimici S.p.A.: *See—*
Bianchi, Giuseppe; and Nidula, Antonio E., 3,833,357.

Oshima, Akio: *See—*
Sakazume, Yugoro; Oshima, Akio; Jin, Kunio; Nakano, Masashi; and Uchida, Takashi, 3,833,379.

Osier, James. Collapsible container. 3,833,113, Cl. 206-4.000.

Osojnak, Boris M. One piece sealing ring. 3,833,114, Cl. 206-53.000.

Otto, Paul Hans: *See—*
Eriksoo, Edgar; Fex, Hans Jacob; Hogberg, Knut Bertil; Mollberg, Henri Rene; Rohte, Oskar Adolf; and Otto, Paul Hans, 3,833,567.

Ouchi, Shunji; and Shibuya, Chisei, to Deutsche Gold-und Silber-Scheideanstalt vormals Roessler, mesne. Process for the preparation of Dl-methionine. 3,833,651, Cl. 260-534.00s.

Ovako Oy: *See—*
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Owen, Haven Trask; and Deeley, Charles William, to American Cyanamid Company. Method of sealing plastic containers. 3,833,142, Cl. 215-351.000.

Owen, William John; and Cooper, Bryan Ewart, to Dow Corning Limited. Peroxy containing silanes. 3,833,633, Cl. 260-448.20b.

Owens-Corning Fiberglas Corporation: *See—*
Langlois, Roland E.; and Roberson, Cletis L., 3,832,840.

Owens-Illinois, Inc.: *See—*
Amberg, Ralph G.; and Amberg, Stephen W., 3,833,332.
Boyer, Joseph E., 3,833,702.
Croom, Hardy C., 3,833,463.
Fein, Michael E.; and Schermerhorn, Jerry D., 3,833,832.
Keys, Melvin H.; and Semersky, Frank E., 3,833,555.
Petty, William D.; and Rough, Kirkwood H., 3,833,831.
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Oxford Industries, Inc.: *See—*
Warnock, Emmit F.; Williamson, Bobby Wayne; Ellington, Gordon H.; and Mitchell, William O., 3,832,927.

Pace, Hubert Julian. Tire trimming and painting device. 3,832,972, Cl. 118-2.000.

Pacific Air Products Co.: *See—*
Hess, Louis R., 3,832,940.

Pacilio, Joseph C., to Continental Can Company, Inc. Method and system for sterilizing magnetically attracted objects. 3,833,339, Cl. 21-80.000.

Paljug, Joseph W.: *See—*
Lucero, Daniel P.; Barden, James D.; and Paljug, Joseph W., 3,833,016.

Palm, John W., to Amoco Production Company. Method for using reheat gas in sulfur recovery systems. 3,833,716, Cl. 423-574.000.

Palma, James R. Apparatus for aiding severed nerves to join. 3,833,002, Cl. 128-334.00r.

Palmer, Euple I. Heart simulation 331/117.00r. 3,833,865, Cl. .

Palmer, Leonard; and Flusfeder, Joseph. Machine for manufacturing disc records. 3,833,328, Cl. 425-308.000.

Paolini, Michael J.: *See—*
Kirk, Donald, Jr.; and Paolini, Michael J., 3,833,757.

Papa, Anthony Joseph; and Proops, William Robert, to Union Carbide Corporation. Halo-aryl amide-ester polyols. 3,833,641, Cl. 260-471.00r.

Papa, Anthony Joseph; and Proops, William Robert, to Union Carbide Corporation. Cycloaliphatic polyols. 3,833,665, Cl. 260-611.00r.

Papanastassiou, Zinon B.; Atkinson, Edward R.; and McRitchie, Donna D., to Little, Arthur D., Inc. Tropanyl a,a-diphenyl-a-fluoroacetate esters. 3,833,592, Cl. 260-292.000.

Paramount Southern Co.: *See—*
Stout, Roger D., 3,832,829.

Parenti, Marcantonio: *See—*
Ambrogi, Vittori; Logemann, Willy; Parenti, Marcantonio; and Tommasini, Raffaele, 3,833,578.

Parfitt, Maurice; and Langley, Keith William, to Westinghouse Brake and Signal Company. Vehicle braking systems. 3,833,271, Cl. 303-21.00a.

Parke, Donald P.: *See—*
Gebhardt, Richard A.; Priester, Willis M.; Muchlinski, Donald A.; King, Donald L.; Parke, Donald P.; Goldberg, Gerald M.; Scheidler, Stuart P.; and Sidlo, Richard, 3,833,904.

Parker, David L. Aritficial sundial. 3,832,842, Cl. 58-50.00r.

Parks, Kenneth B., to United States of America, Army. Radiation hardened flip-flop. 3,833,824, Cl. 307-291.000.

Parks-Cramer Company: *See—*
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Parris, John L.; and Oldham, Herman J., to Carborundum Company, The. Apparatus for clamping and discharging workpiece. 3,833,112, Cl. 198-283.000.

Pasch, Lambert, to Uniroyal A.G. Segmental mold. 3,833,323, Cl. 425-47.000.

Pasley, Harry M.; and Dau, Neil J., Jr.; deceased (by Dau, Carol; executrix). Fluid disseminating device. 3,833,177, Cl. 239-201.000.

Pass-Port Systems Corporation: *See—*
Brooks, Norman B., 3,833,018.

Passpoint Corporation: *See—*
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Patel, Raoji, to North American Philips Corporation. Emergency lighting system. 3,833,817, Cl. 307-66.000.

Patrick, Elbert L., to Metalphoto Corporation, a division of Horizons Research Incorporated. Coloring of anodized aluminum. 3,833,374, Cl. 96-36.000.

Pauza, William Vito: *See—*
Cassarly, James William; Graeff, Norwood Claude; Hooper, Dean Roosevelt; Pauza, William Vito; Sheesley, Wilmer Lee; and Youngfleish, Frank Christian, 3,833,869.

Pauze, Denis R.: *See—*
Holub, Fred F.; Pauze, Denis R.; and Bialous, Charles A., 3,833,681.

Pavlica, Zdenek, to ELITEX. Double lift dobby. 3,833,027, Cl. 139-71.000.

Pawloski, Chester E., to Dow Chemical Company, The. Dimethyl acetal of 1-(2,4-di-sec-butylphenoxy)-2-propanone. 3,833,668, Cl. 260-613.00d.

Pazemenas, Vytautas V.: *See—*
Bell, Robert F.; Dinger, James R.; Laymon, Marvin D.; and Pazemenas, Vytautas V., 3,833,897.

Pedersen, Dennis C.; and Sautier, Philip M., to Pillsbury Company, The. Vitamin enriched potato flakes. 3,833,739, Cl. 426-72.000.

Pedi, Mario J. Slicer having automatic materials feed. 3,832,929, Cl. 83-714.000.

Pelin, Charles. Dashboard-mounted automatic route information desplay device. 3,832,909, Cl. 74-12.000.

Pelta, Edmond R., to Autoscan, Inc. Chassis dynamometer. 3,832,894, Cl. 73-117.000.

Perdue, George Francis: *See—*
Spicer, Dalton Harold; Perdue, George Francis; and MacGregor, William Roderick, 3,833,136.

Perry, Roger L., to Gillette Company, The. Razor blade assembly. 3,832,774, Cl. 30-32.000.

Pershing, Roscoe Louis, to Deere & Company. Vehicle seat comprising three foam layers. 3,833,259, Cl. 297-452.000.

Peshin, John, to Carter's Ink Company, The. Donor sheet for pulsed electrical printing. 3,833,409, Cl. 117-218.000.

Petersen, Tom Kastrup, to Danfoss A/S. D.C.-fed regulated direct-current supply. 3,833,848, Cl. 321-19.000.

Peterson, Kenneth L.: *See—*
Peterson, Lawrence W.; Gallo, Thomas J.; Peterson, Kenneth L.; and Garofalo, Donald L., 3,833,326.

Peterson, Lawrence W.; Gallo, Thomas J.; Peterson, Kenneth L.; and Garofalo, Donald L., to Andersen Corporation. Post-forming apparatus. 3,833,326, Cl. 425-174.400.

Peterson, Willard Emanual, Jr.; and Youngberg, Charles Harold, to Deere & Company. Spring biased scraper for disk implements. 3,833,067, Cl. 172-566.000.

Petit, Pierre: *See—*
Brugerolle, Jean-Renaud; and Petit, Pierre, 3,833,477.

Petree, Edwyn H., to Western Electric Company, Incorporated. Method of stripping insulation. 3,832,767, Cl. 29-427.000.

Petres, Stephen Anthony: *See—*
Jahnke, Earl Milton; and Petres, Stephen Anthony, 3,832,861.

Petrini, Guido: *See—*
Moreschini, Luciano; Marciandi, Franco; Petrini, Guido; and Faletti, Franco, 3,833,639.

Petrizilka, Theodor. 6a,10a,-Trans-6a,7,8,10a-tetrahydrodibenzo(b,d)-pyrans. 3,833,616, Cl. 260-345.300.

Petrow, Vladimir: *See—*
Grunwell, Joyce F.; Benson, Harvey D.; and Petrow, Vladimir, 3,833,621.

Petrucci, Pasquale M.: *See—*
Rapoza, Edward J.; Siegel, Maxwell E.; Estelle, Weems E.; Petrucci, Pasquale M.; Linarducci, Josep S.; Hamma, John; and Montgomery, John, 3,832,969.

Pettersson, Karl Albin Bertil, to Luxor Industri Aktiebolag. Driving mechanism for the turntable in record players. 3,833,225, Cl. 274-9.00a.

Petty, William D.; and Rough, Kirkwood H., to Owens-Illinois, Inc. Electronic conditioning of gaseous discharge display panels. 3,833,831, Cl. 315-169.000.

Pfeffer, Gerd: *See—*
Drebinger, Peter; and Pfeffer, Gerd, 3,833,881.

Pfiffner, Albert: *See—*
Chodnekar, Madhukar Subraya; Pfiffner, Albert; Schwieter, Ulrich; Rigassi, Norbert; and Suchy, Milos, 3,833,642.

Pfizer Inc.: *See—*
Dominy, Beryl W., 3,833,582.
McManus, James M., 3,833,591.

Philbin, Robert E. Pedal actuated exercising device with adjustable load control. 3,833,216, Cl. 272-73.000.

Philibert, Robert A., to General Signal Corporation. Grounding connector for strand cable assembly. 3,833,754, Cl. 174-65.0ss.

Philipot, Jean-Pierre: *See—*
Bizot, Jean; Courteix, Jean; and Philipot, Jean-Pierre, 3,833,490.

Phillips, Barrie Maurice: *See—*
Saeed, Sheikh Arshad; Schneider, Cyril; and Phillips, Barrie Maurice, 3,833,732.

Phillips Petroleum Company: *See—*
Cobb, Raymond L., 3,833,637.
Farfaglia, Silvio T., 3,833,155.
Gall, James W., 3,833,061.
Gardner, Lloyd E.; and Mahan, John E., 3,833,679.

Piasek, Edmund J.; and Puskas, Imre, to Standard Oil Company. 4-(High molecular weight alkyl-substituted carbophenoxy) phthalic anhydride and analogous diacid. 3,833,618, Cl. 260-346.300.

Pietsch, Wolfgang B.: *See—*
Pitzer, Hans-Joachim; and Pietsch, Wolfgang B., 3,833,327.

Pike, John E., to Upjohn Company, The. Prostaglandin E[1D, F[1D, and A[1D analogs. 3,833,640, Cl. 260-468.00d.

Pike, Marshall; and Routledge, Alan Watson, to Albright and Wilson Limited. Oil extraction process. 3,833,628, Cl. 260-412.000.

Pillsbury Company, The: *See—*
Katz, Morris H.; and Durst, Jack R., 3,833,741.
Pedersen, Dennis C.; and Sautier, Philip M., 3,833,739.

Pilot Research Corporation: *See—*
Shields, Harper, 3,832,869.

Pilston, Robert G. Lure container. 3,832,798, Cl. 43-57.50r.

Pinfield, Maurice John, to Placer Exploration Limited. Gearbox. 3,832,914, Cl. 74-812.000.

Pipe Line Development Company, The: *See—*
Smith, Joseph B., 3,833,020.

Pipe Supports Limited: *See—*
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Pitney-Bowes, Inc.: *See—*
Lupkas, Raymond R.; Freeman, Gerald C.; and Check, Frank T., Jr., 3,832,946.

Pitzer, Hans-Joachim; and Pietsch, Wolfgang B., to Hutt GmbH. Method of and apparatus for removing wood particles yielded in chipboard production. 3,833,327, Cl. 425-203.000.

Placer Exploration Limited: *See—*
Pinfield, Maurice John, 3,832,914.

Plasko, Emil Robert, to Micro Devices Corporation. Means and method for protecting an overheating communication unit. 3,833,835, Cl. 317-40.00r.

Plastic Industries, Inc., mesne: *See—*
Nankivell, Erby Roy Jr.; and Turner, James H., 3,832,747.

Platz, Rolf: *See—*
Kuerten, Heribert; Nagel, Otto; Platz, Rolf; and Sinn, Richard, 3,833,719.

Pliskin, Irwin, to Uniroyal, Inc. Die swell testing. 3,832,886, Cl. 73-56.000.

Pneumatic Scale Corporation: *See—*
Sterling, Walter S.; and Vergobbi, Robert W., 3,833,111.

Podolsky, Leon. Shirt collar having a drainage channel. 3,832,737, Cl. 2-132.000.

Pohl, Franz Arthur; and Bohm, Harald, to Licentia Patent-Verwaltungs-G.m.b.H. Fuel cell with WC catalyst-material protection. 3,833,423, Cl. 136-86.00d.

Polaroid Corporation: *See—*
Allen, Joseph H., 3,833,914.
Chen, Richard J.; and McCole, Thomas P., 3,833,381.
Chiklis, Charles K.; and Lubin, Paul D., 3,833,369.
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Land, Edwin H.; and Bloom, Stanley M., 3,833,368.
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Simon, Myron S.; and Waller, David P., 3,833,615.
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Polin, Benson: *See—*
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Pollution Control Industries, Inc.: *See—*
Bollyky, L. Joseph, 3,833,492.

Poot, Albert Lucien: *See—*
Hazenbosch, Edwin Hendrik; and Poot, Albert Lucien, 3,833,373.

Poppenwimmer, Kurt; and Roedel, Hilmar, to Sandoz Ltd. Process for the resin finishing of cellulosic fabrics and cellulosic blend fabrics with simultaneous improvement of their affinity for optical brighteners. 3,833,397, Cl. 117-33.50t.

Porret, Daniel: *See—*
Habermeier, Jurgen; and Porret, Daniel, 3,833,548.

Porter, Wallace M.: *See—*

Samuels, Ronald L.; Porter, Wallace M.; and Friederichs, Josef E., 3,832,784.

Porter, William A.; Burough, Irvin G.; and Kline, Donald D., to Commercial Electronics, Inc. Gas analyzing apparatus. 3,833,305, Cl. 356-201.000.

Possis Corporation: *See—*
Walus, Richard L., 3,832,821.

Postupack, Dennis S., to PPG Industries, Inc. Electroconductive solder. 3,833,362, Cl. 75-134.00t.

Pottinger, Arthur D.; Ryder, William V., Jr.; and Shuert, Lyle H., to Jered Products, Inc. Reinforced plastic panel. 3,832,955, Cl. 108-51.000.

Powell, Charles W. Simulated stained glass in concrete art assembly. 3,833,450, Cl. 161-5.000.

Pozella, William; and Chaplin, Henry D., Jr., to SCM Corporation. Typewriter motor clutch. 3,833,101, Cl. 192-105.0cf.

PPG Industries, Inc.: *See—*
Ohlberg, Stanley M.; and Jones, James V., 3,833,388.
Postupack, Dennis S., 3,833,362.
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PPG Industries, Inc., mesne: *See—*
Young, Elgin E., 3,833,415.

Pravda, Milton F.: *See—*
Snyder, Donald L.; Himes, John H.; and Pravda, Milton F., 3,833,428.

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Laurent, Henry; Wiechert, Rudolf; Prezewowsky, Klaus; Hofmeister, Helmut; Gerhards, Erich; Mengel, Klaus; and Kolb, Karl Heinz, 3,833,563.

Price, David D., Jr.: *See—*
DeBell, Lawrence R.; and Price, David D., Jr., 3,833,922.

Price, Ford C., mesne: *See—*
DeBell, Lawrence R.; and Price, David D., Jr., 3,833,922.

Priester, Willis M.: *See—*
Gebhardt, Richard A.; Priester, Willis M.; Muchlinski, Donald A.; King, Donald L.; Parke, Donald P.; Goldberg, Gerald M.; Scheidler, Stuart P.; and Sidlo, Richard, 3,833,904.

Prochnow, George Dale. Pen point cleaner. 3,832,752, Cl. 15-341.000.

Procter & Gamble Company, The: *See—*
Curry, John Downing, 3,833,565.

Proctor & Gamble Company, The: *See—*
Hardy, Frederick Edward; and Speakman, Peter Roscoe Hartley, 3,833,597.

Productron, INc.: *See—*
Schmidt, Gunter, 3,833,917.

Produits Chimiques Pechiney-Saint-Gobain: *See—*
Meiller, Francois, 3,833,632.

Prokai, Bela; and Kanner, Bernard, to Union Carbide Corporation. Solution compositions of organosilicone polymers. 3,833,512, Cl. 252-356.000.

Proops, William Robert: *See—*
Papa, Anthony Joseph; and Proops, William Robert, 3,833,641.
Papa, Anthony Joseph; and Proops, William Robert, 3,833,665.

Protzman, John M., to Ever-Roll Manufacturing Corp., The. Camera support. 3,833,196, Cl. 248-206.00r.

Pruett, Roy L.; and Walker, Wellington E., to Union Carbide Corporation. Manufacture of polyfunctional compounds. 3,833,634, Cl. 260-449.00r.

Przybyla, Bernd: *See—*
Gotz, Werner; and Przybyla, Bernd, 3,833,270.

Pulk, Elgas; deceased (by Hallsenius, Carlgustaf; administrator); and Noren, John Paul, to Stabilator AB. Mobile-platform-supported device for the application of a sprayable material to a surface. 3,833,175, Cl. 239-160.000.

Pulkkinen, Erkki J.; Reintjes, Marten; and Starr, Laurence Dean, to International Telephone and Telegraph Corporation. Hemicellulose reaction products. 3,833,527, Cl. 260-9.000.

Purdue Frederick Company, The: *See—*
Negrevergne, Georges, 3,833,729.

Puskas, Imre: *See—*
Piasek, Edmund J.; and Puskas, Imre, 3,833,618.

Puskas, Louis, to Royle, John, & Sons. Breech-lock mechanism for extrusion apparatus. 3,833,247, Cl. 285-414.000.

Pyro Control, Inc.: *See—*
Williams, Robert A., 3,833,063.

Quant, Donald J.; and Braband, Edward C., to Xerox Corporation. Heated pressure fusing system. 3,833,790, Cl. 219-216.000.

Quigley Company, Inc.: *See—*
Dreyling, Alfred P., 3,833,391.

Raab, Stephan: *See—*
Kreuz, Otto; and Raab, Stephan, 3,833,048.

Rabodzei, Nikolai Vasilievich: *See—*
Efanov, Valery Pavlovich; Komyak, Nikolai Ivanovich; Ljuttsau, Vsevolod Grigorievich; and Rabodzei, Nikolai Vasilievich, 3,833,810.

Rafferty, John W.: *See—*
Iannazzi, Fred D.; Rafferty, John W.; Sparrow, Donald B.; and Strauss, Richard, 3,833,460.

Rajchman, Jan Aleksander, to RCA Corporation. Holographic memory including corner reflectors. 3,833,893, Cl. 340-173.01m.

Ramacciotti, Aldo, to Centro Sperimentale Metallurgico S.p.A. Process for the reduction, in liquid phase, of iron ore in a rotary kiln. 3,833,355, Cl. 75-40.000.

Ramsay, Melvin Murray; and McLennan, Anthony Ian, to International Standard Electric Corporation. Pulsed oscillator for low light level television system. 3,833,763, Cl. 178-7.200.

Ramsey, John C. Balanced Flow extrusion head. 3,833,325, Cl. 425-113.000.

Rand, Sidney: *See—*
Abrahams, Michael A.; Blacksburg, Alvin Brent; and Rand, Sidney, 3,833,001.

Randell, Donald Richard: *See—*
Holt, Brian; Randell, Donald Richard; and Jack, James, 3,833,636.

Randolph, George J. J., Jr. Dual-mount electromechanical deflection sensor. 3,832,898, Cl. 73-141.00a.

Rank Organisation Limited: *See—*
Collinson, John Dunn, 3,833,771.

Rank Organization Limited, The: *See—*
Moore, William Thomas, 3,833,301.

Rank Xerox, Ltd.: *See—*
Eukushima, Osamu; Sato, Masamichi; and Matsumoto, Seiji (said Fukushima and said Matsumoto assors. by mesne assigts. to), 3,832,975.

Ranney, Joseph W., Jr. Means for extinguishing fires. 3,833,064, Cl. 169-2.00r.

Ransburg Electro-Coating Corporation: *See—*
Spiller, Lester L., 3,833,467.

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Schulze, Heinz; and Marquis, Thomas, to Jefferson Chemical Company, Inc. Preparation of nitrilotriacetic acid. 3,833,650, Cl. 260-531.00c.
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Ammann, Heinz, 3,832,979.
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Suzuki, Akira, to Aisin Seiki Kabushiki Kaisha. Fluid power steering mechanism. 3,833,081, Cl. 180-79.200.

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Suzuki, Motoyuki, to Ricoh Co., Ltd. Device for detecting a transport mishap of a copy paper in a reproducing apparatus. 3,833,896, Cl. 340-259.000.

Suzuki, Takeo; Tomita, Fusao; Honda, Haruo; Shirahata, Kunikatsu; Deguchi, Takashi; and Kato, Fumio. Process for preparing chloramphenicol analogues. 3,833,476, Cl. 195-96.000.

Swartz, James R., to Sears, Roebuck and Co. Automatic brightness control for photographic projectors. 3,833,297, Cl. 353-85.000.

Swatzell, Jonathan Michael, Jr. Skein holder with slideable biased pegs. 3,833,183, Cl. 242-127.000.

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Sweet, Phillip J.; Hamlet, Buck C.; and Sweet, david L., to American Carrier Equipment. Front axle assembly for a full trailer. 3,833,237, Cl. 280-125.000.

Syassen, Onno, to M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Piston cylinder engine with pressurized piston rod seal. 3,832,935, Cl. 92-156.000.

Syben, Peter H.: *See—*
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Sybron Corporation: *See—*
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Syntex Corporation: *See—*
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Thompson, Geoffrey F., 3,833,725.

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Takagi, Kunio: *See—*
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Takekoshi, Tohru; and Manello, Jeannette S., to General Electric Company. Method for making polyetherimides. 3,833,544, Cl. 260-47.0cb.

Takekoshi, Tohru; and Kochanowski, John E., to General Electric Company. Method for making polyetherimides. 3,833,546, Cl. 260-47.0cp.

Talan, Maryan. Device for fastening objects to walls or other supports. 3,832,931, Cl. 85-83.000.

Talavera, Jean Joseph, to Eastman Kodak Company. Magnetic tape cassette. 3,833,185, Cl. 242-199.000.

Tamaki, Toshio: *See—*
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Tanaka, Harumi; and Yoshizaki, Akira, to Minolta Camera Kabushiki Kaisha. Electronic shutter apparatus for camera. 3,833,915, Cl. 354-258.000.

Tanaka, Heiroku; and Onda, Katsuyoshi, to Matsushita Electric Industrial Co., Ltd. Rotary switch with spring loaded cam means. 3,833,783, Cl. 200-153.001.

Tanaka, Kazuo: *See—*
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Taniguchi, Hideo, to Toyo Electronics Industry Corp. Thermal printing head. 3,833,789, Cl. 219-216.000.

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Taricco, Alfred. Intravascular occluding catheter. 3,833,003, Cl. 128-347.000.

Tariel, Henri; and Guyon, Roger, to L'Air Liquide Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude and La Societe Anonyme dite: Pneumatiques, Caoutchouc Manufacture et Plastiques Kleber-Colombes. Regular cellular material having agood mechanical strength at low temperatures. 3,833,523, Cl. 260-2.50r.

Tasse, Noel. Dumping scraper-barrow. 3,833,262, Cl. 298-2.000.

Tatchell, Keith Reid: *See—*
Lee, Edward William; Tatchell, Keith Reid; Challis, Kenneth John; and Cockerton, Kenneth Archibald, 3,833,405.

Tatsuke, Shogo; Yanagisawa, Osamu; and Kaneko, Toshiaki, to Nippon Yusen Kaisha. Method for inhibiting the formation of sludge in fuel oils. 3,833,345, Cl. 44-63.000.

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Taylor, Gary Newton; and White, Donald Lawrence, to Bell Telephone Laboratories, Incorporated. Guest-host liquid crystal device. 3,833,287, Cl. 350-160.01c.

Taylor, Keith M.: *See—*
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Taylor, Paul Franklin. Process for class VIIIB metals ore reduction. 3,833,353, Cl. 75-21.000.

Tee-Pak, Inc.: *See—*
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Telang, Yeshwant P.; and Uy, James C., to Ford Motor Company. Coating for apex seals of rotary engines and method of making. 3,833,320, Cl. 418-178.000.

Telang, Yeshwant P.; and Uy, James C., to Ford Motor Company. Wear-resistant coating for rotary engine side housing and method of making. 3,833,321, Cl. 418-178.000.

Teledyne Industries, Inc.: *See—*
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Temple, William F., to Allis-Chalmers Corporation. Duct damper for transverse fan. 3,833,006, Cl. 130-27.0hf.

Tenneco Chemicals, Inc.: *See—*
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Teschner, Allen R. Swimming pool and method of making the same. 3,832,814, Cl. 52-169.000.

Texas Industries, Inc.: *See—*
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Texas Instruments, Incorporated: *See—*
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Theobald, Hans; and Kiehs, Karl, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Preparation of 2-chloroethanephosphonic acid. 3,833,645, Cl. 260-502.40r.

Thomas, David A.: *See—*
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Thomasen, Norman Leonard. Low-frequency loud speaker. 3,833,085, Cl. 181-32.00r.

Thominet, Michel Leon, to Societe d'Etudes Scientifiques et Industrielles de l'Ile-de-France. Method of anesthetizing a mammal by administration of a substituted 2-arylalkyloxy benzamide. 3,833,733, Cl. 424-324.000.

Thompson, Geoffrey F., to Syntex Corporation. Dialkylated glycol compositions and medicament preparations containing same. 3,833,725, Cl. 424-243.000.

Thompson, William A., Jr., to Original Plastic Bike, Inc. Bicycle frame. 3,833,242, Cl. 280-281.000.

Thomson, Kenneth W., to Eastman Kodak Company. Friction clutch apparatus. 3,832,866, Cl. 64-27.00c.

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Tickle, John Edward, to Ferranti Limited. Television systems. 3,833,760, Cl. 178-6.800.

Tierney, Paul A.; Hendrick, Ross M.; and Gabbert, James D., to Monsanto Company. Reinforced polyamide compositions and process of preparation thereof. 3,833,534, Cl. 260-37.00n.

Tilt-Safe, Inc.: *See—*
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Timesavers, Inc.: *See—*
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Tocci, Paul M. Spotting device. 3,833,341, Cl. 23-259.000.

Todd-Reeve, Leslie, to Hoover Company, The. Combination washing and drying machine with water level control and fan clutch. 3,832,870, Cl. 68-20.000.

Toepfl, Werner, to Ciba-Geigy AG. Dithiophosphates. 3,833,600, Cl. 260-293.850.

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Tomalia, Donald A.; and DeVrieze, Jerry D., to Dow Chemical Company, The. N-(ar-vinylbenzyle) aziridines. 3,833,557, Cl. 260-239.00e.

Tombu, Gerard. Process and device for draping or making up wall or other surfaces by means of flexible sheets, e.g. of fabrics. 3,833,046, Cl. 160-327.000.

Tominaga, Hiroshi; Takamatsu, Masanobu; and Adachi, Kouhei, to Tokyu Sharyo Seizo Kabushiki Kaisha. Impact hydraulic forming equipment. 3,832,877, Cl. 72-59.000.

Tomita, Fusao: *See—*
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Toth, Maria Kovacs: *See—*
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Toth, Paul: *See—*
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Tournier, Christian Yves; and Buzy-Debat, Jean Marie C. S., to International Standard Electric Corporation. Safety device. 3,833,890, Cl. 340-172.500.

Tovini, Raffaele, to Dalmine S.p.A. Process and apparatus for supplementary cooling of the center of a continuously cast metal bar. 3,833,047, Cl. 164-66.000.

Toyo Electronics Industry Corp.: *See—*
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Toyo Jozo Kabushiki Kaisha: *See—*
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Trevithick, Tony, to Woodhead, Daniel, Inc. Tube light hand lamp. 3,833,801, Cl. 240-11.40r.

Triplett, Lloyd M. Grain treating operations. 3,833,749, Cl. 426-450.000.

Trombe, Felix; and Michel, Jacques, to Agence Nationale de Valorisation la Recherche (Anvar). Naturally air-conditioned dwellings. 3,832,992, Cl. 126-270.000.

Trosch, Charles P. Portable broiler. 3,832,990, Cl. 126-41.00r.

Trui, Josef; Riesenber, Klaus-Otto; and Schwerin, Inge, to Bosch, Robert, G.m.b.H. Fluid operated safety brake system. 3,833,269, Cl. 303-21.00f.

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Tucker, Harold A.; and Kemp, Richard V. Trihalomethyl hydrocarbon glycidyl ethers and polymer compositions thereof. 3,833,522, Cl. 260-2.00a.

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Tudos, Ferenc: *See—*
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Ukaji, Rokuo; and Morioka, Ichiro, to Daikin Kogyo Co., Ltd. Fluorination of 1,1,1-trichloroethane with hydrogen fluoride. 3,833,676, Cl. 260-653.700.

Ullman, John E., to Huntingdon Industries Incorporated. Box forming and filling method and machine. 3,832,826, Cl. 53-35.000.

Ulmachneider, Lawrence A.; and Dowling, Edward H., to Eastman Kodak Company. Injection molding apparatus. 3,833,329, Cl. 425-246.000.

Umezono, Akimi; Saito, Takao; and Wake, Ryousuke, to Nippon Steel Corporation. Process for pre-treating can materials for lacquering. 3,833,483, Cl. 204-38.00e.

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Carlson, Peter S.; Smith, Harold H.; and Dearing, Rosemarie D., 3,832,801.
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Department of Transportation: *See—*
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National Aeronautics and Space Administration; Administrator; with respect to an invention of:
Dickens, Lawrence E. Millimeter wave pumped parametric amplifier. 3,833,857, Cl. 330-4.900.
Goodyer, Michael J. Stagnation pressure probe. 3,832,903, Cl. 73-388.000.
Topits, Albert, Jr. Apparatus for forming drive belts. 3,833,322, Cl. 425-28.00b.

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Marzek, Ronald A.; and Read, William S. Tool for use in lifting pin-supported objects. 3,832,764, Cl. 29-203.00h.

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Abita, Joseph L.; and Noyes, Carlton F., 3,833,298.
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Van der Meer, Jan, to Polaroid Corporation. Photographic camera support. 3,833,916, Cl. 354-293.000.

Van Leer Verpackungen GmbH: *See—*
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van Stratum, Antonius Johannes Alberta; and Mitra, Niranjan Kumar, to U.S. Philips Corporation. Method of manufacturing a lanthanum hexaboride-activated cathode for an electric discharge tube. 3,833,494, Cl. 204-181.000.

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Vidal, Paul Benjamin. Method and apparatus for producing elements by moulding. 3,833,695, Cl. 264-47.000.

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Villiers-Fisher, John F., to Chemical Construction Corporation. Removal of sulfur dioxide from gas streams. 3,833,711, Cl. 423-244.000.

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Visser-Patings, Wilhelmina Louise Maria. Pouring stop. 3,833,150, Cl. 222-109.000.

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Vojkovic, Milos. Process for beneficiating molybdenate concentrate to produce molybdenum trioxide. 3,833,352, Cl. 75-1.000.

Vola, Mathias J. J. M.; and Janssen, Willem P. H. A., to Oce-van der Grinten N. V. Optical scanning system for photocopying. 3,833,296, Cl. 355-51.000.

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Weiss, Bernard; Brechner, Stanley; and Schoenholz, Daniel, said Brechner and said Schoenholz assor. to said Weiss, Bernard. Cleaning of hair brushes with reducing agents. 3,833,418, Cl. 134-42.000.

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Wickersheim, Kenneth A.; and Buchanan, Robert A., to Lockheed Aircraft Corporation. Laser devices and compositions. 3,833,862, Cl. 331-94.50f.

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Wingrove, Robert C., to Medtronic, Inc. Compared count digitally controlled pacemaker. 3,833,005, Cl. 128-419.00p.

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Winters, Donald C., to Congoleum Industries, Inc. Felt backing for vinyl floor covering having a binder comprised of synthetic rubber latex and a reactive thermoset resin. 3,833,459, Cl. 162-155.000.

Wirth, John J. C. Abrading aid containing paraffin and an inhibitor. 3,833,346, Cl. 51-306.000.

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Young, Robert R.; and Medland, Robert W., to Kaiser Industries, Inc. Load handling equipment. 3,833,140, Cl. 214-658.000.

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LIST OF DEFENSIVE PUBLICATIONS

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DEFENSIVE PUBLICATIONS WERE ISSUED ON THE 3RD DAY OF SEPTEMBER, 1974

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O. G. 687.

Blackwell, Wayne W., J. J. O'Connell, E. B. Pierce, and J. E. Shahe, to International Business Machines Corp. Method and apparatus for start I/O queuing. T926,012, 9–3–74, Cl. 340—172.5.

Bonner, Raymond E., to International Business Machines Corp. Routine for identifying a P-wave train. T926,014, 9–3–74, Cl. 444—1.

Brack, Karl, to Hercules Inc. Cross-linkable compositions. T926,001, 9–3–74, Cl. 260—858.

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Doherty, Walter J., to International Business Machines Corp. Method of scheduling in a data processing system. T926,007, 9–3–74, Cl. 444—1.

Dolen, Cecil W.: *See*—
Elliott, Robert M., Dolen, and Myers. T926,010.

Dombroski, John R. Process for rapidly curing unsaturated polyester molding compositions wherein the unsaturated polyester is prepared from 2,2,4-trimethyl-1,3-pentanediol. T926,005, 9–3–74, Cl. 260—861.

Eberly, Kenneth C., and E. L. Kay, to The Firestone Tire & Rubber Co. Thermal chlorination of butadiene-1,3. T926,002, 9–3–74, Cl. 260—655.

Elliott, Robert M., C. W. Dolen, and E. L. Myers. Apparatus and method for seaming material with hot melt adhesive. T926,010, 9–3–74, Cl. 156—202.

Exner, Jurgen H., and E. R. Larsen. Fire-retardant polycarbonates. T926,009, 9–3–74, Cl. 260—45.7.

Firestone Tire & Rubber Co., The: *See*—
Eberly, Kenneth C., and Kay. T926,002.

Gillette Co., The: *See*—
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Hatsukano, Yoshikazu: *See*—
Nomiya, Kosei, Hatsukano, and Torii. T926,003.

Hercules Inc.: *See*—
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Kay, Edward L.: *See*—
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Kun, Daniel J., and L. H. Lotfallah, to The Gillette Co. Ink reservoir for writing instruments. T926,011, 9–3–74, Cl. 401—132.

Larsen, Eric R.: *See*—
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Lotfallah, Lotfi H.: *See*—
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Myers, Ernest L.: *See*—
Elliott, Robert M., Dolen, and Myers. T926,010.

Newman, Larry B. Apparatus and method for seaming material with hot melt adhesive. T926,006, 9–3–74, Cl. 156—291.

Nomiya, Kosei, Y. Hatsukano, and S. Torii. Polyphase logical circuit employing complementary misfets. T926,003, 9–3–74, Cl. 307—205.

O'Connell, John J.: *See*—
Blackwell, Wayne, W., O'Connell, Pierce, and Shahe. T926,012.

Pavey, Thomas E. Mastic of inorganic insulating cement poly (m-phenyleneisophthalamide) fibers, and water. T926,004, 9–3–74, Cl. 260—29.2.

Pierce, Edwin B.: *See*—
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Shahe, John E.: *See*—
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Thompson, Benjamin. Dimethyl 5-Bromoisophthalate. T926,013, 9–3–74, Cl. 260—475.

Torii, Shuichi: *See*—
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Weaver, James C., and R. L. Combs. Copolyester molding compositions of improved processability. T926,008, 9–3–74, Cl. 260—860.

LIST OF REISSUE PATENTEES

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Aisin Seiki Co. Ltd.: *See*—
Kazaoka, Kenichi. Re. 28,142.

Allegheny Ludlum Steel Corp.: *See*—
Harbaugh, Samuel S., Kasecky, and Murtland. Re. 28,149.

Benson, Robert W., and R. G. Reed, to Cutlers Machine Co., Inc. Apparatus for aligning a web of patterned sheet material. Re. 28,148, 9–3–74, Cl. 270—31.

Briggs & Stratton Corp.: *See*—
Tharman, Paul A. Re. 28,145.

Buzano, Michel, to Rhone-Poulenc-Textile. Process for producing a novel textured yarn. Re. 28,150, 9–3–74, Cl. 57—157.

Cutlers Machine Co., Inc.: *See*—
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Goron, John, by Midland-Ross Corp. Injection molding nozzle with flow-control mechanism. Re. 28,144, 9–3–74, Cl. 425—191.

Harbaugh, Samuel S., J. J. Kasecky, and J. B. Murtland, Jr., to Allegheny Ludlum Steel Corp. Rolling mill control system. Re. 28,149, 9–3–74, Cl. 72—8.

Harris-Intertype Corp.: *See*—
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Kazaoka, Kenichi, to Aisin Seiki Co. Ltd. Automotive door lock. Re. 28,142, 9–3–74, Cl. 180—113.

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Tharman, Paul A., to Briggs & Stratton Corp. Rectifier network assembly. Re. 28,145, 9–3–74, Cl. 321—8.

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Frampton's Nurseries Ltd.: *See*—
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Shoesmith, Leonard H., to Pan-American Plant Co. Chrysanthemum (red bonanza). 3,609, 9–3–74, Cl. 82.
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Brown, Raymond C. 232,632.
Thompson, John F., and D. R. Payton, to W. R. Weaver Co. Wide angle telescopic sight. 232,661, 9–3–74, Cl. D57—1.
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CLASS 2
2.1A 3,832,735
123 3,832,736
132 3,832,737

CLASS 4
41 3,832,739
110 3,832,738
145 3,832,740
172.12 3,832,741

CLASS 5
62 3,832,742
334C 3,832,743
336 3,832,744

CLASS 9
6 3,832,745
400 3,832,746

CLASS 10
27R 3,832,747

CLASS 14
1 3,832,748

CLASS 15
230.11 3,832,749
250.16 3,832,750
250.23 3,832,751
341 3,832,752
371 3,832,753

CLASS 16
152 3,832,754
156 3,832,755
163 3,832,756

CLASS 21
80 3,833,339

CLASS 23
230HC 3,833,340
259 3,833,341
273SP 3,833,342

CLASS 24
137A 3,832,757

CLASS 26
18.6 3,832,758

CLASS 28
1.3 3,832,759

CLASS 29
25.14 3,832,760
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159.2 3,832,763
180R 3,833,343
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203MM 3,832,766
203B 3,832,765
203H 3,832,764
427 3,832,767
428 3,832,768
626 3,832,769
630D 3,832,770

CLASS 30
28 3,832,771
32 3,832,774
152 3,832,775
272A 3,832,773
272 3,832,776
392 3,832,772

CLASS 32
11 3,832,777
14E 3,832,778
48 3,832,779

CLASS 33
2R 3,832,780
23R 3,832,781
88 3,832,782
138 3,832,783
174C 3,832,784
174G 3,832,785
288 3,832,786
358 3,832,787

CLASS 34
13 3,832,788
99 3,832,789

CLASS 35
8R 3,832,790
25 3,832,791

CLASS 36
2.5AL 3,832,792
2.5R 3,832,793

CLASS 42
90 Re.28,146

CLASS 43
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17 3,832,795
25 3,832,796
43.11 3,832,797
57.5R 3,832,798

CLASS 44
63 3,833,345

CLASS 46
1R 3,832,799
11 3,832,800

CLASS 47
1.1 3,832,802
57.5 3,832,803
58 3,832,801

CLASS 49
13 3,832,804
503 3,832,805

CLASS 51
71 3,832,806
138 3,832,807
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320 3,832,809

CLASS 52
67 3,832,810
69 3,832,811
127 3,832,812
169 3,832,813
3,832,814
227 3,832,815
496 3,832,816
583 3,832,817
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741 3,832,819
753T 3,832,820

CLASS 53
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22B 3,832,824
25 3,832,825
32 3,832,822
35 3,832,823
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111R 3,832,827
112A 3,832,828
198R 3,832,829

CLASS 55
158 3,832,830
218 3,832,831
302 3,832,832
378 3,832,833

CLASS 56
6 3,832,834
7 3,832,835
104 3,832,836
218 3,832,837
377 3,832,838

CLASS 57
106 3,832,839
140J 3,832,840
152 3,832,841
157TS Re.28,150

CLASS 58
50R 3,832,842
57.5 3,832,843
74 3,832,844

CLASS 60
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39.28R 3,832,846
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274 3,832,848
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641 3,832,853

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45D 3,832,856
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CLASS 62
227 3,832,862
298 3,832,863
374 3,832,864

CLASS 64
17A 3,832,865
27C 3,832,866

CLASS 65
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CLASS 66
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CLASS 68
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CLASS 71
98 3,833,350

CLASS 72
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405 3,832,881

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56 3,832,886
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388 3,832,903
421.5A 3,832,904
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242.14R 3,832,910
492 3,832,911
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764 3,832,913
812 3,832,914
869 3,832,915

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41 3,833,356
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125 3,833,359
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130B 3,833,361
134T 3,833,362
175.5 3,833,363

CLASS 81
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53R 3,832,917
57.33 3,832,918

CLASS 82
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1C 3,832,919
20 3,832,920

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4 3,832,922
16 3,832,923
167 3,832,924
174 3,832,925
311 3,832,926
409 3,832,927
467 3,832,928
714 3,832,929

CLASS 84
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1.24 3,833,752

CLASS 85
30 3,832,930
83 3,832,931

CLASS 89
40J 3,832,932

CLASS 91
167 3,832,937
374 3,832,933
375A 3,832,936

CLASS 92
130 3,832,934
156 3,832,935

CLASS 93
58R Re.28,143
93C 3,832,938

CLASS 96
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3 3,833,367
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29R 3,833,372
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36 3,833,374
36.2 3,833,375
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66.3 3,833,378
66.4 3,833,379
74 3,833,380
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3,833,382
84R 3,833,383
115P 3,833,384

CLASS 98
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110 3,832,940

CLASS 100
137 3,832,941

CLASS 101
93C 3,832,942
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103 3,832,943
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327 3,832,947
401.1 3,832,948

CLASS 102
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CLASS 104
7B 3,832,952
154 3,832,945
162 3,832,953

CLASS 105
199C 3,832,954

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58 3,833,390
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293 3,833,394

CLASS 108
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CLASS 109
1R 3,832,958

CLASS 110
99R 3,832,959

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CLASS 114
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124.1 3,832,971

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CLASS 119
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75B 3,832,983
122AB 3,832,984
141 3,832,985
148E 3,832,987
148R 3,832,986

CLASS 126
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CLASS 127
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CLASS 128
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85 3,832,997
214E 3,832,998
275 3,832,999
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277 3,833,001
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347 3,833,003
349B 3,833,004
419P 3,833,005

CLASS 130
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CLASS 132
53 3,833,007
85 3,833,008
91 3,833,009

CLASS 134
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6 3,833,415
7 3,833,416
22C 3,833,417
24 3,833,010
42 3,833,418
3,833,419

CLASS 135
5AT 3,833,011
15PQ 3,833,012

CLASS 136
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86D 3,833,423
86R 3,833,424
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111 3,833,427
202 3,833,428

CLASS 137
171 3,833,013
251 3,833,014
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340 3,833,016
625.47 3,833,018
625.62 3,833,017

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94 3,833,020
118.1 3,833,021
3,833,022
148 3,833,023

CLASS 139
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71 3,833,027
122R 3,833,028
370 3,833,026

CLASS 141
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26 3,833,030
84 3,833,031
232 3,833,032

CLASS 144
3D 3,833,034
3R 3,833,033
144A 3,833,036

CLASS 145
29R 3,833,037
46 3,833,038

CLASS 148
1.5 3,833,429
31.5 3,833,430
113 3,833,431

CLASS 149
19.3 3,833,432

CLASS 152
241 3,833,039
330 3,833,040
347 3,833,041
353 3,833,042
357A 3,833,043

CLASS 156

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13 3,833,436
55 3,833,443
130 3,833,437
167 3,833,438
219 3,833,439
234 3,833,441
244 3,833,440
331 3,833,442
400 3,833,444
401 3,833,445
499 3,833,446
505 3,833,447
541 3,833,448
556 3,833,449

CLASS 159

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CLASS 160

133 3,833,045
327 3,833,046

CLASS 161

5 3,833,450
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112 3,833,452
151 3,833,453
159 3,833,454
164 3,833,455
167 3,833,456
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216 3,833,458

CLASS 162

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19 3,833,461
29 3,833,462
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3,833,464
129 3,833,465
142 3,833,466
155 3,833,459
181D 3,833,467
264 3,833,468

CLASS 164

66 3,833,047
131 3,833,049
155 3,833,048
281 3,833,050

CLASS 165

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60 3,833,053
67 3,833,054
82 3,833,055
107 3,833,056
123 3,833,057
161 3,833,058

CLASS 166

57 3,833,059
68 3,833,060
294 3,833,061

CLASS 169

15 3,833,062
28 3,833,063
52 3,833,064

CLASS 171

28 3,833,065

CLASS 172

131 3,833,066
566 3,833,067

CLASS 173

120 3,833,069
164 3,833,070
169 3,833,068

CLASS 174

52S 3,833,753
65SS 3,833,754
117F 3,833,755

CLASS 175

20 3,833,075
38 3,833,076
57 3,833,071
85 3,833,072
87 3,833,074
173 3,833,073
325 3,833,077

CLASS 176

16 3,833,469
68 3,833,470
78 3,833,471

CLASS 178

5.4R 3,833,756
5.6 3,833,757
6.8 3,833,758
3,833,759
3,833,760
7.1 3,833,761
3,833,762
7.2 3,833,763
7.5D 3,833,764
79 3,833,765

CLASS 179

1HF 3,833,766
15.55R 3,833,767
42 3,833,768
100.3V 3,833,769
111E 3,833,770
115.5PV 3,833,771
170NC 3,833,772
175.2R 3,833,773

CLASS 180

42 3,833,078
44F 3,833,079
79.2R 3,833,080
79.2 3,833,081
99 3,833,082
3,833,083
104 3,833,084
113 Re.28,142

CLASS 181

32R 3,833,085
33A 3,833,086
120 3,833,087

CLASS 182

48 3,833,088
91 3,833,089
92 3,833,090

CLASS 187

8.49 3,833,091
12 3,833,092

CLASS 188

1A 3,833,094
1C 3,833,093
71.9 3,833,095
85 3,833,096
181A 3,833,097

CLASS 190

11 3,833,098

CLASS 191

12R 3,833,774
3,833,775
57 3,833,776

CLASS 192

13R 3,833,099
85 3,833,100
105CF 3,833,101
111A 3,833,102
3,833,103

CLASS 194

1B 3,833,104

CLASS 195

3 3,833,472
29 3,833,473
65 3,833,474
80R 3,833,475
96 3,833,476
109 3,833,477

CLASS 197

1R 3,833,105
3,833,106
18 3,833,107
151 3,833,108
175 3,833,109

CLASS 198

34 3,833,110
255 3,833,111
283 3,833,112

CLASS 200

31A 3,833,777
33R 3,833,778
3,833,779
50AA 3,833,780
61.58B 3,833,781
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153L 3,833,783
157 3,833,784

CLASS 202

151 3,833,478
235 3,833,479

CLASS 203

88 3,833,480

CLASS 204

3 3,833,481
11 3,833,482
29 3,833,484
38E 3,833,483
43R 3,833,485
44 3,833,486
46G 3,833,487
3,833,488
59QM 3,833,489
78 3,833,490
158S 3,833,491
176 3,833,492
180R 3,833,493
181 3,833,494
195F 3,833,495
279 3,833,497

CLASS 206

4 3,833,113
53 3,833,114
306 3,833,115
431 3,833,116

CLASS 208

111 3,833,499
307 3,833,498

CLASS 209

3 3,833,117
28 3,833,118
99 3,833,119
399 3,833,120

CLASS 210

91 3,833,121
207 3,833,122
241 3,833,123
460 3,833,124
477 3,833,125
531 3,833,126

CLASS 211

86 3,833,127
131 3,833,128

CLASS 212

14 3,833,129
39R 3,833,130

CLASS 213

158 3,833,131

CLASS 214

6G 3,833,132
16.4C 3,833,133
17D 3,833,134
3,833,137
64.2 3,833,135
131A 3,833,136
334 3,833,138
518 3,833,139
658 3,833,140

CLASS 215

344 3,833,141
351 3,833,142

CLASS 219

69G 3,833,785
121L 3,833,786
121P 3,833,787
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216 3,833,789
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464 3,833,793
502 3,833,794

CLASS 220

64 3,833,145
267 3,833,144
345 3,833,143

CLASS 221

66 3,833,146
202 3,833,147
250 3,833,148

CLASS 222

70 3,833,149
109 3,833,150
193 3,833,151
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3,833,153
212 3,833,154
275 3,833,155
383 3,833,156

CLASS 223

46 3,833,157
68 3,833,158
85 3,833,159

CLASS 224

42.1F 3,833,160

CLASS 226

92 3,833,161
184 3,833,162

CLASS 228

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CLASS 229

37R 3,833,164
3,833,165
62.5 3,833,166
69 3,833,167

CLASS 232

39 3,833,168

CLASS 234

110 3,833,169

CLASS 235

61.7R 3,833,795
151.3 3,833,796
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153AE 3,833,798

CLASS 236

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102 3,833,171

CLASS 238

10R 3,833,172

CLASS 239

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201 3,833,177
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CLASS 240

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CLASS 241

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CLASS 242

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118.1 3,833,182
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158R 3,833,184
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83A 3,833,190
122A 3,833,191
139 3,833,192

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54CS 3,833,194
125 3,833,195
206R 3,833,196
441 3,833,197
476 3,833,198

CLASS 249

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CLASS 250

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CLASS 251

35 3,833,200

CLASS 252

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CLASS 256

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CLASS 259

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191 3,833,204

CLASS 260

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DESIGN PATENTS

4 : 232,612
6 : 232,603
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U.S. DEPARTMENT OF COMMERCE
Frederick B. Dent, *Secretary*

PATENT OFFICE
C. Marshall Dann, *Commissioner*